

Hitachi PC VisionBase 8450H/R Server

Product Guide

Issue Date: January 1999

Part Number: 202-85042-01 Rev. A

Copyright:

© 1998 Hitachi Ltd. and Hitachi PC Corporation (USA). All rights reserved.

Hitachi is a registered trademark of Hitachi Ltd. Mobilized Computing and Hitachi VisionBase are trademarks of Hitachi PC Corporation (USA) and may be registered in some jurisdictions. All other brands and products and service names mentioned are trademarks or registered service marks of their respective owners.

Trademarks

Microsoft, MS-DOS, Windows, and the Windows Logo are registered trademarks of Microsoft Corporation.

Intel is a registered trademark of Intel Corporation.

Pentium II is a registered trademark of Intel Corporation.

IBM and PS/2 are trademarks of International Business Machines Corporation.

All other brands and product names are trademarks or registered trademarks of their respective holders.

Disclaimer

Hitachi PC Corporation has taken every precaution to provide complete and accurate information in this document. However, due to continuous efforts being made to improve and update the product(s), Hitachi shall not be liable for any technical or editorial errors or omissions contained in this document, or for any damage, direct or indirect, from discrepancies between the document and the product(s) it describes.

Information in this manual is subject to change without notice and does not represent a commitment on the part of Hitachi PC Corporation.

Hitachi PC strongly recommends that you keep separate, permanent, written records of all important data, and perform periodic backups. Data may be lost or altered in virtually any electronic memory product under certain circumstances. Therefore, Hitachi PC assumes no responsibility for data loss or data otherwise rendered unusable whether as a result of improper use, repairs, defects, or any other causes.

Hitachi PC assumes no responsibility directly or indirectly, for financial losses or claims from third persons resulting from the use of this product and any of its functions, such as stolen credit card numbers, the loss of or alteration of stored data, etc.

Disclaimer

Intel Corporation (Intel) makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Intel assumes no responsibility for any errors that may appear in this document. Intel makes no commitment to update nor to keep current the information contained in this document. No part of this document may be copied or reproduced in any form or by any means without prior written consent of Intel.

An Intel product, when used in accordance with its associated documentation, is “Year 2000 Capable” when, upon installation, it accurately stores, displays, processes, provides, and/or receives date data from, into, and between the twentieth and twenty-first centuries, including leap year calculations, provided that all other technology used in combination with said product properly exchanges date data with it.

Third-party brands and trademarks are the property of their respective owners.

Copyright © 1998, Intel Corporation.

Contents

1: Hitachi PC VisionBase 8450H/R Server System Chassis Description	1
Chassis Feature Summary	1
Chassis Front View	2
Operator Panel and Drives	3
Chassis Rear I/O Ports and Features	4
2: Installation and Use of Devices	5
Notes on Handling	5
Installation Site	5
Notes on Handling for Each Device	6
Names and Functions of Each Part	9
System Equipment	9
Internal CD-ROM (Standard)	13
Internal DAT (Optional)	14
Internal DAT Changer (Optional)	15
Internal DLT (Optional)	20
Internal DLT (Optional)	24
Turning Power On/Off	28
Turning Power On	28
Turning Power Off	29
Connecting External Devices	30
Connecting Displays	30
Connecting a Keyboard or Mouse	31
Connecting a Printer	32
Connecting a Power Cord	32
Connecting an Uninterruptible Power Supply Unit (Optional)	33
Connecting an External Disk Array Unit (Optional)	35
3: Installing Optional Devices	37
Installing Locations for Option Devices	37
Expansion Slots	37
Extended Storage Bays	38
Removing and Installing Covers	39
Removing the Cover	39
Installing Covers	44
Installing Redundant Power Supply	46
Installing SCSI Devices	48
Basics on SCSI Devices	48
Disk Array	51
Building a Disk Array	57
Notes on Building Disk Arrays	59
Installing a SCSI Device	62
Installing Various Boards	81
Installing Processors	81
Installing Memory DIMMs	86
Installing Extended Boards	90

4: System Environment Settings	97
SCSI Utility	97
Flow of Operation with the SCSI Utility	97
What You can Set with Adapter Setup	100
What You Can Set with Device Selections	103
Other Functions	106
List of Setting Values for SCSI Devices	108
Error Messages for the SCSI Utility	110
Returning the Settings to Defaults	112
Returning the Settings of the Setup Information to Defaults	112
Returning the SSU Settings to Defaults	112
Returning the SCSI Utility Settings to Defaults	113
List of Utility Settings	113

1: Hitachi PC VisionBase 8450H/R Server System Chassis Description

Chassis Feature Summary

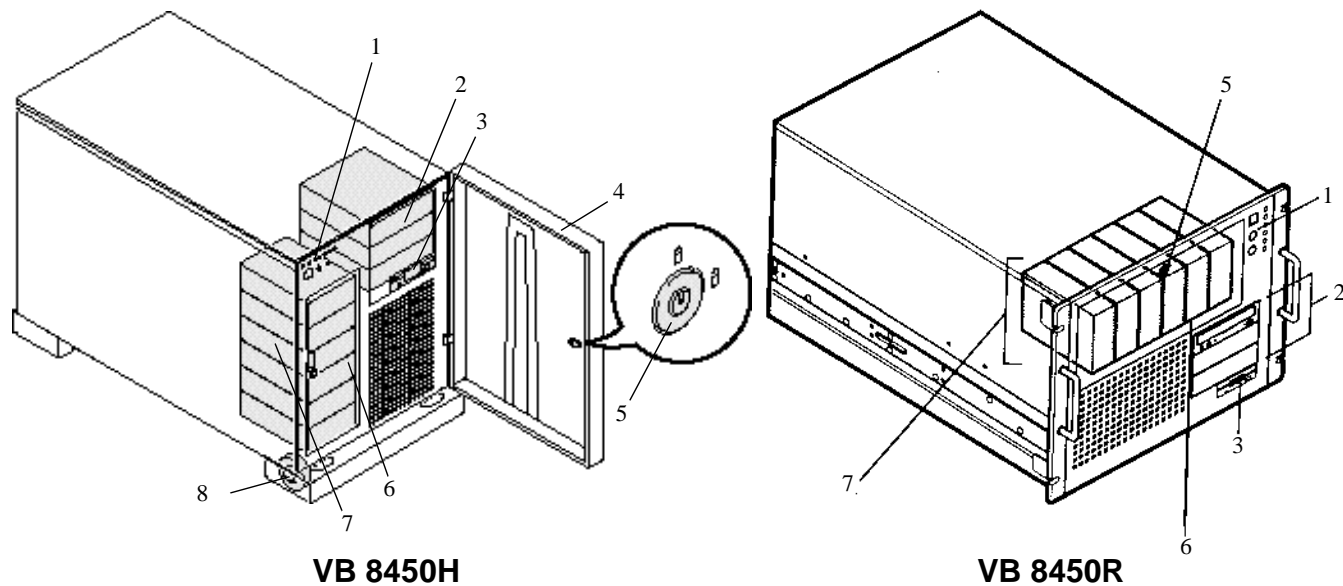
The Hitachi VisionBase 8450's galvanized metal chassis minimizes EMI and radio frequency interference (RFI). The removable covers are attached to the chassis with screws and provides easy access to the server boards and power supplies. The removable front panel provides access to the 3.5- and 5.25-inch peripheral bays in the front of the chassis.

NOTE: The Hitachi VisionBase 8450R hardware configuration is almost the same as the Hitachi VisionBase 8450H.

In the Hitachi VisionBase 8450R, the rack mount is rotated 90 degrees to the right and a bridge board installed for connectivity to other rack option devices.

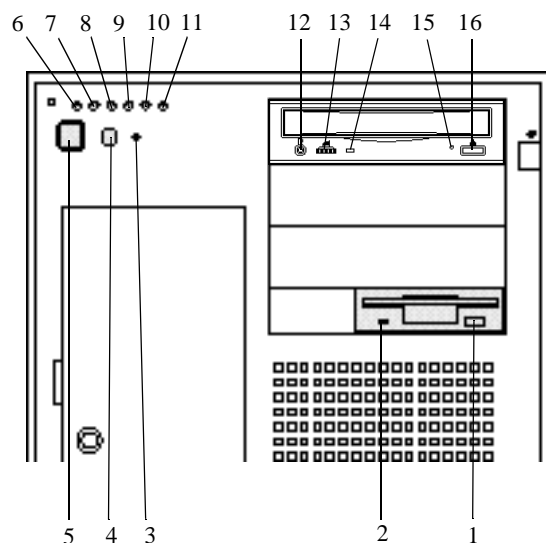
Feature	Description
Operator Panel	Provided with Power switches and Status lights for system operation
Extended Storage Bays Bays 7 to 9 Bays 1 to 6	One 3.5-inch diskette drive bay, accessible from front Three extended storage Bays for SCSI devices Six Extended Storage Bays for internal hard disks, located to the left of the 3.5-inch drive
3.5 inch Floppy Drive	This Drive is standard in all systems. You can use both 2DD (720kB) and 2HD (1.44MB) floppy disks in this system.
Power supply	Two 420-watt Auto ranging power supplies with integrated cooling fans. Each power supply has its own AC power cord. Note: The chassis has three power supply bays. The system may be configured with three power supplies (2+1) for power redundancy.
Cooling	Each Power Supply unit has its own fan to provide cooling and airflow.
Dimensions (inches)	Length = 25.6, width =14, height = 17.6
Weight	176 lbs. without packaging (Maximum) 220 lbs. with packing (Maximum)

Chassis Front View

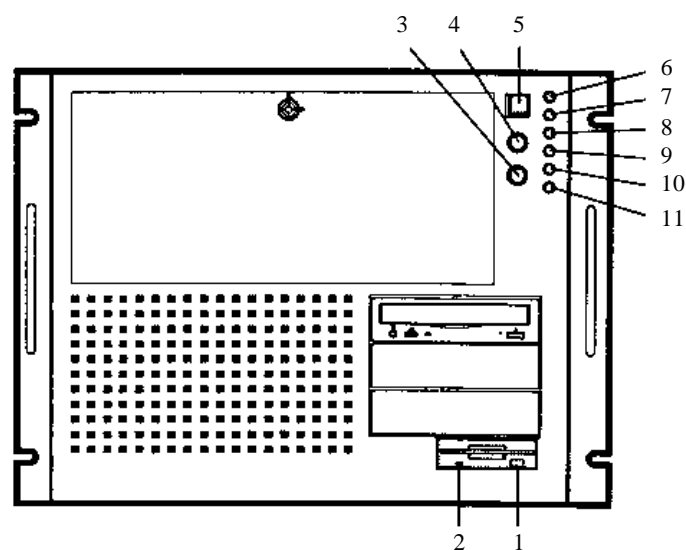


1. Operator Panel
2. Extended storage bays 7-9
3. 3.5-inch floppy disk drive
4. Front door
5. Front door lock
6. Storage bay door
7. Extended storage bays 1-6
8. Caster

Operator Panel and Drives



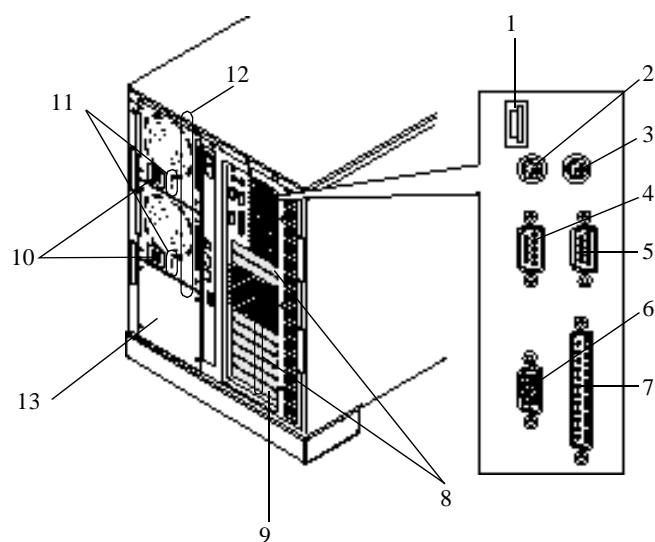
VB 8450H



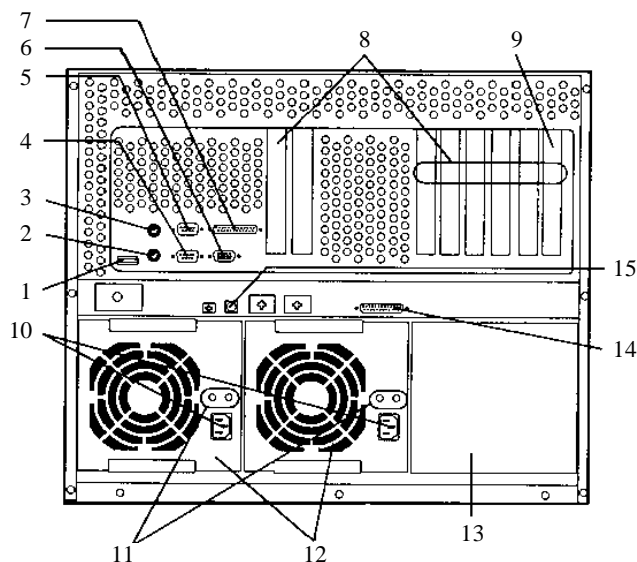
VB 8450R

1. Floppy disk eject button
2. Floppy disk access lamp
3. Expansion switch. **NOT TO BE USED. Do NOT press this switch. (This feature is not supported.)**
4. RESET switch
5. POWER switch
6. POWER lamp
7. ACCESS lamp
8. ERROR lamp
9. HDD ERROR lamp
10. FAN ERROR lamp
11. PS ERROR lamp
12. Headphone jack
13. Headphone volume control
14. CD Busy indicator
15. Manual eject hole
16. CD Open/close button

Chassis Rear I/O Ports and Features



VB 8450H



VB 8450R

1. USB connector
2. Keyboard interface connector
3. Mouse interface connector
4. Serial interface connector (COM2)
5. Serial interface connector (COM1)
6. Display interface connector
7. Parallel interface connector
8. Expansion slot(PCI) 1 to 7
9. Expansion slot (ISA) 1 (shared with PCI slot #7)
10. Power Connectors
11. Power status lamp
12. Power supply 1 and 2 (standard)
13. Power supply 3 (optional)
14. Error interface connector
15. PTL connector

2: Installation and Use of Devices

This chapter explains installation sites for the system equipment and basic uses of removable devices.

Notes on Handling

Installation Site

The following table lists environmental conditions for installing the system equipment:

Item	Allowable range
Temperature	10 to 35°C [Non-operating: -10 to 43°C]
Relative humidity	20 to 80% [Non-operating: 8 to 90%] (avoid condensation)
Max. wet-bulb temperature	27°C
Temperature rise gradient	10°C/hour (max)
Minimum clearance required	50 cm in front of equipment, 30 cm behind, and 20 cm to the right and left

Avoid installing the system equipment in the following locations:

- Location exposed to direct the sun light
- Location where temperature or relative humidity changes rapidly
- Location near a device (such as motor) generating electric noise
- Location near a device generating strong magnetic field
- Location with much dust and litter
- Location with much vibration
- Location where corrosive gas is generated such as sulfur dioxide, hydrogen sulfide, chlorine gas, or ammonia
- Location without ventilation, such as within a fully enclosed shelf or box

Notes on Handling for Each Device

System Equipment

- Be sure to install the equipment horizontally on the floor. Avoid installing it on a table or stand. If necessary, insert cardboard or equivalent between the equipment and the floor for adjustment.
- Avoid sitting on the equipment; otherwise you could fall off or suffer from an electric shock.
- Avoid putting vases, beverages, or similar things containing water on the equipment; introduction of water into the equipment could cause short-circuit.
- Avoid using the system equipment with its cover removed or with the storage bay door open; otherwise an electric shock or a failure could be caused.
- Revert the side covers from shock, because the equipment contains hard disk drives and other devices, which are susceptible to shock.
- When moving the equipment, do not let the equipment hit surrounding materials.
- Avoid blocking the vent holes on the front and back of the system equipment; insufficient ventilation could cause a failure of the equipment. Inspect the vent holes for dust constantly and clean them periodically.
- Keep the door key (attached to the system equipment) properly. If you lose it, it will become necessary to replace the entire key unit. If such is the case, consult the store where you bought the equipment.
- While the system is being started up, avoid executing keyboard resetting (Ctrl + Alt + Delete); otherwise a system error will occur.



It is recommended that you constantly make backup copies of data to ensure uninterrupted operation. A failure in the system equipment or power outage could cause the data in your system to be lost.

Keyboard and Mouse



Only Hitachi products are guaranteed. If products of other companies are used, operation cannot be guaranteed.

- Prevent water from splashing on the keyboard or mouse.
- When cleaning, use soft cloth such as cotton cloth with a small quantity of water sprayed. Avoid spraying water directly on the keyboard or mouse and wiping it with wet cloth.

Displays



Only Hitachi products are guaranteed. If products of other companies are used, operation cannot be guaranteed.

- Keep sufficient space around so that when swiveled the display does not hit any surrounding material.
- Avoid putting things on the display; otherwise ventilation could be insufficient for the display to be cooled properly, resulting in a failure.
- Keep the display away from magnets and loudspeakers to prevent color drift.
- Keep at least 70 cm between two displays to prevent interference in magnetic fields.

Internal DAT and Internal DAT Changer (Optional)



Use of a cartridge with its service life exhausted could cause a drive failure or data destruction. While not in use, remove the cartridge from the equipment. If you leave the cartridge inserted, its service life will be shortened.

Only Hitachi products are guaranteed. If products of other companies are used, operation cannot be guaranteed.

- Data cartridges usable in an internal DAT and internal DAT changer are:

Tape length (format)	Memory capacity
60m tape (DDS-1)	1.3GB (uncompressed) to 2.6GB (compressed ¹)
90m tape (DDS-1)	2.0GB (uncompressed) to 4.0GB (compressed ¹)
120m tape (DDS-2)	0GB (uncompressed) to 8.0GB (compressed ¹)
125m tape (DDS-3)	12GB (uncompressed) to 24GB (compressed ¹)

¹ It is assumed that the average data compression ratio is 2.0. (The data compression ratio depends on transfer data.)

The formatting modes of 60m/90m tape, 120m tape, and 125m tape differ from each other. When you use drives incompatible with each other, check the formatting modes corresponding to the drives, then decide on the tape length for the cartridge.

- The standard service life (number of uses) of a cartridge used in an internal DAT changer is 160 times. If the number of uses exceeds 160, replace the cartridge with a new one.
- To minimize condensation, note the following:
 - Use cartridges in a temperature range of 10 to 35°C and a relative humidity range of 20 to 80%. Store cartridges containing data in a temperature range of 5 to 32°C.
 - If the cartridge to be used has been placed somewhere that exceeds the allowable temperature range, leave it at ordinary room temperature at least two hours before use.

Internal DLT (Optional)



Use of a cartridge with its service life exhausted could cause a drive failure or data destruction.

While not in use, remove the cartridge from the equipment. If you leave the cartridge inserted, its service life will be shortened.

Only Hitachi products are guaranteed. If products of other companies are used, operation cannot be guaranteed.

- The standard service life (number of uses) of a cartridge used in an internal DLT is 2000 times. If the number of uses exceeds 2000, replace the cartridge with a new one.
- To minimize dew condensation, note the following:
 - Use cartridges in a temperature range of 10 to 35°C and a relative humidity range of 20 to 80%. Store cartridges containing data in a temperature range of 16 to 32°C.
 - If the cartridge to be used has been placed somewhere that exceeds the allowable temperature range, leave it at ordinary room temperature at least two hours before use.
- Internal DLTs format an unused cartridge when it is inserted into the drive. The formatting mode for an internal DLT differs from that for an internal DLT because of difference in recording density. When you want to use a cartridge on both types of drives, use the internal DLT for formatting the cartridge before use (the recording density is 20GB/40GB (uncompressed/compressed)).

Extended Board



Only Hitachi products are guaranteed. If products of other companies are used, operation cannot be guaranteed.

Check that the slot connectors are engaged properly, then insert an extended board. Forcible insertion with the slot connectors not engaged could cause pins to be bent or broken.

Other Option Devices



Only Hitachi products are guaranteed. If products of other companies are used, operation cannot be guaranteed.

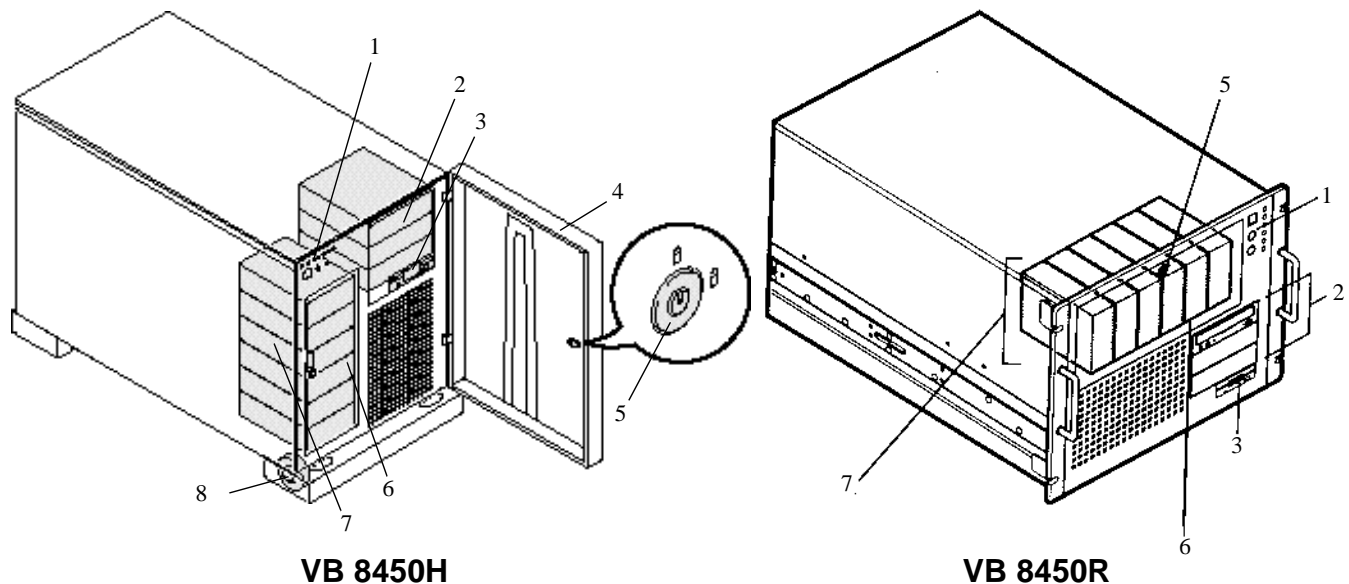
Use extreme care to protect expansion devices from shock (hitting or falling on hard material). Being precision devices, expansion devices are very susceptible to shock.

Names and Functions of Each Part

This section describes the names of parts of the system equipment and option devices (removable devices) and outlines their functions.

System Equipment

Front View



1. Operator panel

Provided with switches to operate the system equipment and lamps to indicate the status of the system equipment. See "Operator Panel" on page 11.

2. Extended storage bays 7 to 9

Used to install various types of SCSI devices, including removable devices such as internal CD-ROMs and internal SCSI devices. See Chapter 3: "Installing Optional Devices" on page 37.

3. 3.5-inch floppy disk drive

Provided as standard in every type of system. The following types of floppy disks are usable:

2DD (720kB format)

2HD (1.44MB format)

4. Front door

Open this door when you operate on the power supply of the system equipment. (Usually, this door should be closed.)

5. Front door lock

Used to lock the front door. The door key is provided at the back of the system equipment.

6. Storage bay door

Open this door when you install or replace internal hard disks. (Usually, this door should be closed.) The door key is provided at the back of the system equipment.

7. Extended storage bays 1 to 6

Used to install internal hard disks. See Chapter 3: “Installing Optional Devices” on page 37.

8. Caster lock

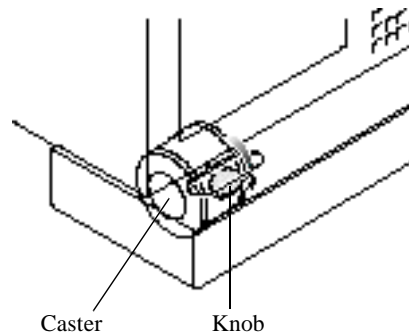


After installing the system, lock the caster, then fix the system equipment.

NOTE: To unlock the caster, reach under the system equipment and lift up the lever.

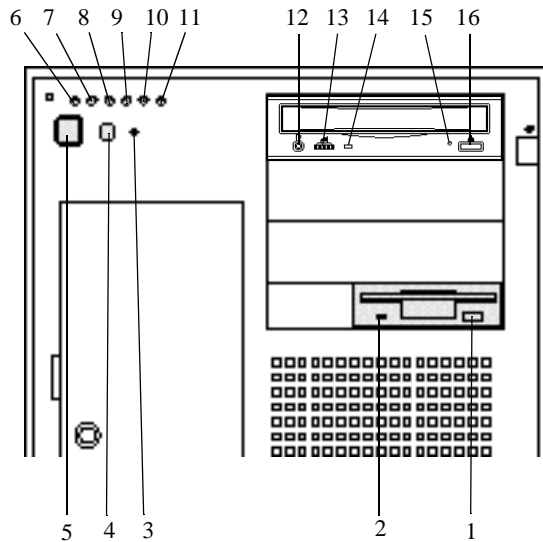
Pressing down the lever in the center of the caster in front of the system equipment will lock the caster to fix the system equipment.

To press down the lever, open the front door, then reach through the slit in the lower part of the system equipment, then press the lever down.

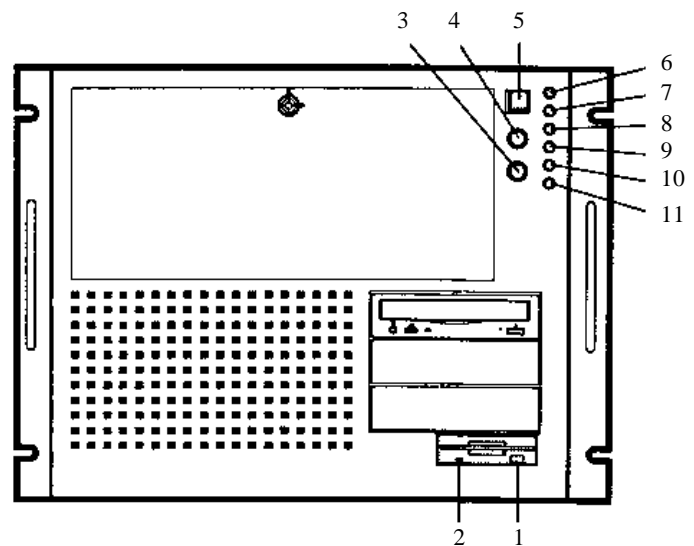


Operator Panel

Opening the front cover from the system equipment, you will see an operator panel like the following:



VB 8450H



VB 8450R

1. Floppy disk eject button

Press this button to remove the floppy disk.

2. Floppy disk access lamp

Comes on when the floppy disk is being accessed.

3. POWER switch

Press this switch to turn on or off the system equipment.

4. RESET switch

Press this switch to reset the system equipment by hardware.

NOTE: Use a ball-point pen or a similar thing when you press the RESET switch.

5. Expansion switch (this feature is not supported)

Not to be used. Do not press this switch.

6. POWER lamp

Comes on when you press the POWER switch to turn on the system equipment.

7. ACCESS lamp

Comes on while an internal hard disk is being accessed.

8. ERROR lamp

Comes on when an error occurs in a hard disk, a fan, or power supply.

9. HDD ERROR lamp

Comes on when a hard disk in the system equipment fails. Blinks while data is being rebuilt.

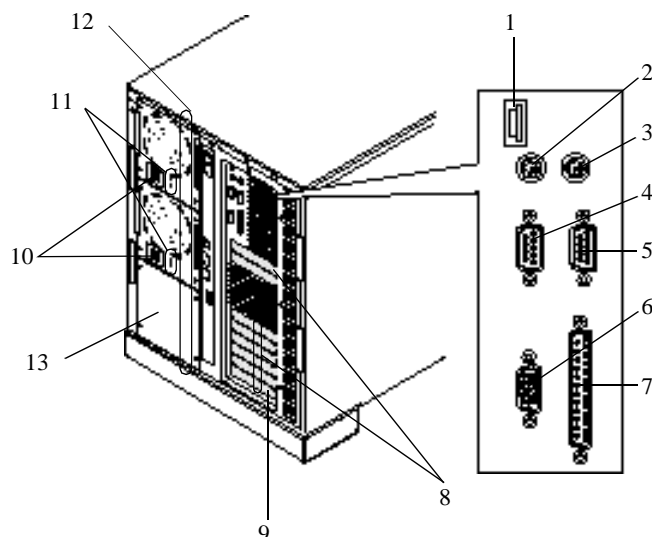
10. FAN ERROR lamp

Comes on when a fan in the system equipment fails.

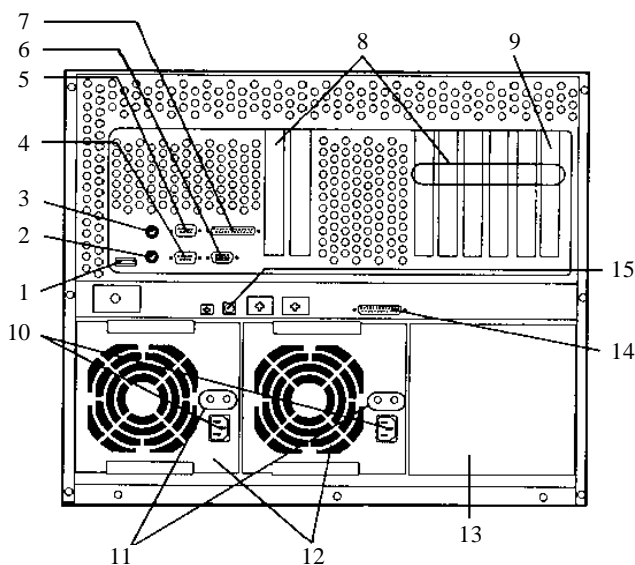
11. PS ERROR lamp

Comes on when the power unit fails.

Rear View



VB 8450H



VB 8450R

1. USB connector

Not to be used.

NOTE: Hitachi PC VisionBase 8450H/R Server does not support USB-compliant devices.

2. Keyboard interface connector

Used to connect a keyboard.

3. Mouse interface connector

Used to connect a mouse.

4. Serial interface connector (COM2)

Used to connect a device that uses a serial interface such as a modem.

5. Serial interface connector (COM1)

Used to connect a device that uses a serial interface such as a modem.

6. Display interface connector

Used to connect a display.

7. Parallel interface connector

Used to connect a device that uses a parallel interface such as a printer.

8. Expansion slots (PCI) 1 to 7

Used to connect PCI-specification boards (up to 7). Slot numbers are 1, 2, 3, etc. from the top.¹

9. Expansion slot (ISA) 1

Used to install an ISA-specification board.¹

10. Power connector

Used to connect a power cord.

¹ Expansion slot (PCI) 7 and expansion slot (ISA) 1 are shared. Either a PCI-specification board or an ISA-specification board can be installed at a time.

11. Power status lamp

Indicates the status of the power unit.

12. Power supply slots 1 to 2

Power units are installed in power slots 1 and 2.

13. Power supply slots 3 (optional)

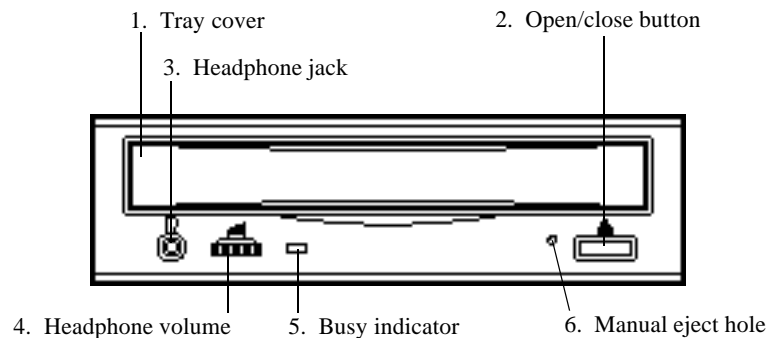
You can install an optional power unit in power slot 3.

14. Error interface connector

Used to connect an Error interface.

15. PTL connector

Used to connect a PTL.

Internal CD-ROM (Standard)**1. Tray cover**

The tray for carrying a CD-ROM is opened and closed here.

2. Open/close button

Used to open and close the tray.

NOTE: You can open or close the tray only while power is on. When a command has been issued to inhibit button-initiated removal of a CD-ROM, you cannot use the open/close button to remove the CD-ROM.

3. Headphone jack

Used to connect the stereo pin plug for the headphone.

4. Headphone volume

Used to adjust the volume level of the headphone.

5. Busy indicator

Comes on while an internal CD-ROM is being started. Blinks during access.

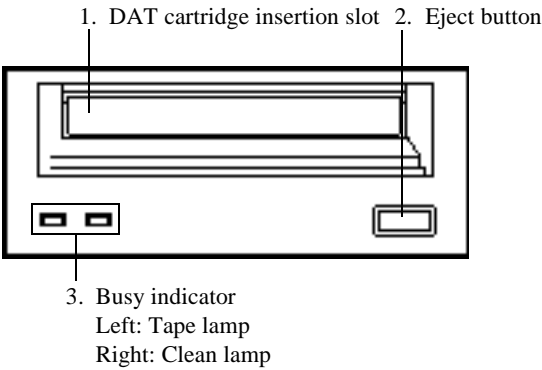
6. Manual eject hole

Manual eject hole

Used to forcibly extract the CD-ROM when it cannot be extracted in an ordinary way because of a device failure. Turn power off, wait about 15 seconds, then insert a thin rod into the hole. Push the rod about 35 mm further from the point of first contact within the hole; the tray cover will open a little. Then use your hand to pull the tray, and extract the CD-ROM.

The rod should be 50 mm or longer and stout, rod with a diameter of 1.0 to 1.8 mm. A straightened-out paper clip is commonly used.

Internal DAT (Optional)



1. DAT cartridge insertion slot

When you insert a DAT cartridge into this slot halfway, the cartridge is automatically drawn in to the full.

2. Eject button

Used to extract a DAT cartridge.

NOTE: The cartridge can be ejected only when power is on. When a command has been issued to inhibit button-initiated removal of a cartridge, you cannot use the eject button to remove the cartridge.

3. Busy indicator

Indicates the operation status according to the way of lighting.

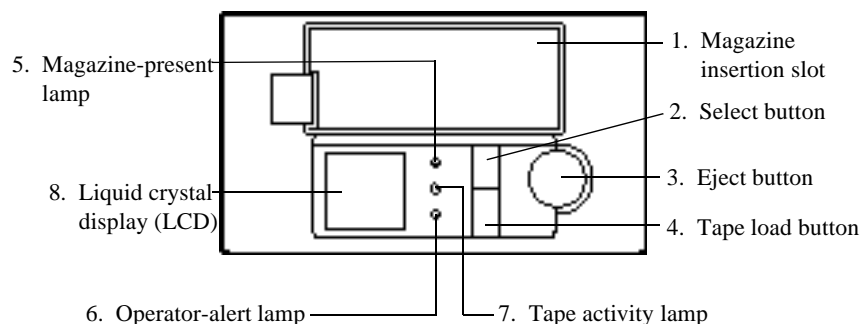
- Normal status

Tape lamp	Clean lamp	Operation status
Blinks in green 	Off 	Data is being loaded or unloaded; or self-test is in progress (when power is turned on).
Blinks in green (fast) 	Off 	Data is being read or written.
Comes on in green 	Off 	Loading completed/online

- Erroneous status

Tape lamp	Clean lamp	Operation status
Off 	Blinks in yellow 	the head needs cleaning; the service life of the cartridge is coming to an end.
Off 	Comes on in yellow 	The drive has failed.

Internal DAT Changer (Optional)



1. Magazine insertion slot

When you insert a cartridge magazine into this slot halfway, the cartridge magazine is automatically drawn in to the full. Up to six DAT cartridges can be installed in one cartridge magazine.

2. Select button

When a cartridge magazine is inserted, you use this button to choose which DAT cartridge in the cartridge magazine to be used.

3. Eject button

Used to eject a cartridge magazine.

[Forced ejection]

Holding down the eject button for five or more seconds will forcibly eject the cartridge.

NOTE: The cartridge magazine can be ejected only when power is on. When a command has been issued to inhibit button-initiated removal of a cartridge magazine, you cannot use the eject button to remove the cartridge magazine.

4. Tape load button

Used to take the DAT cartridge selected by the select button from the cartridge magazine to the drive (this is referred to as loading).

5. Magazine-present lamp

6. Operator-alert lamp

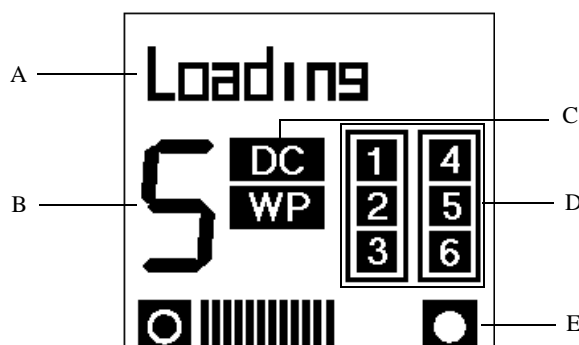
7. Tape activity lamp

The three lamps indicate operation status as in the following table:

Lamp	Lighting	Operation status
Magazine-present	Comes on in green	A cartridge magazine has been inserted.
	Blinks in green	A cartridge magazine is being inserted, checked, or ejected.
Tape activity	Comes on in green	A DAT has been loaded in the drive.
	Blinks in green	Fast blinking (coming on for 0.25 sec. and off for 0.25 sec.) indicates that the DAT is being accessed. Slow blinking (coming on for 0.5 sec. and off for 0.5 sec.) indicates that the DAT is being loaded or unloaded.
Operator-alert	Blinks in yellow	Indicates one of the following: The load mechanism has failed. The firmware is being upgraded. The service life of the tape is coming to an end. The door at the magazine insertion slot is open.

8. Liquid crystal display (LCD)

The liquid crystal display, consisting of the following five portions, displays the operation status of the internal DAT changer.



- A. Displays a message indicating the current status. (See the next page for descriptions of messages.)
- B. Displays the number (location within the cartridge magazine) of the DAT cartridge currently loaded in the drive. Also displays the number of the DAT cartridge selected by the select button.
- C. **DC** comes on when write data is being compressed. **WP** comes on when the DAT cartridge is write-protected.
- D. The six numbers correspond to the slots of the cartridge magazine. If a slot contains a DAT cartridge, the lamp of that number comes on.
- E. Displays the capacity of the loaded DAT cartridge within the active partition. The more the number of lines, the larger the tape capacity.

NOTE: The details of the LED messages are listed in the table below.

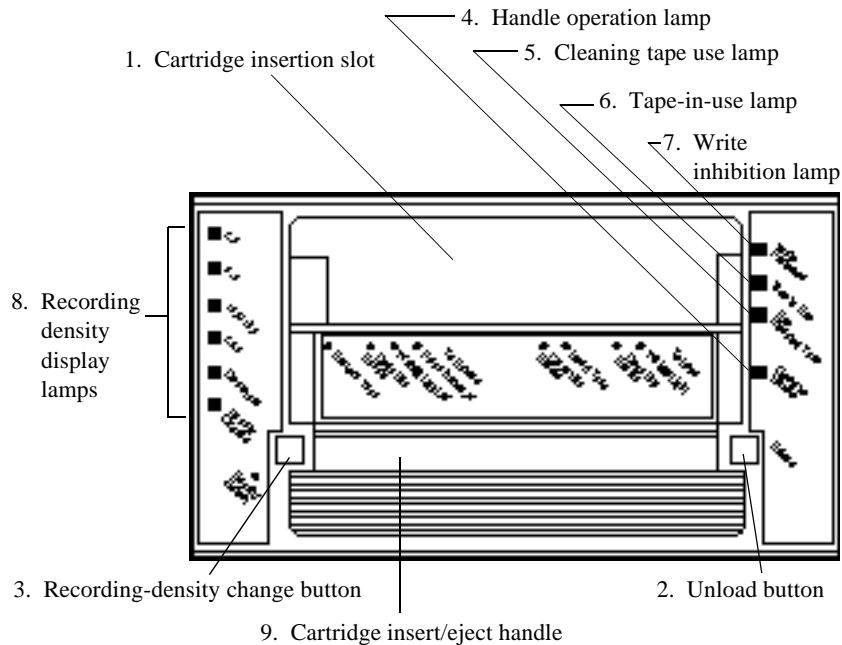
No.	Message	Type	Operator-alert lamp	Meaning
1	At BOD	Error	On	A space command detected an unexpected BOD. The current tape position is BOD.
2	At EOD	Error	On	A read or space command detected an unexpected EOD. The current tape position is BOD.
3	Bad Media	Error	Blinking	The tape in use is other than DDS format. Use a tape of DDS format.
4	C1557A	Information	—	Product ID. This is displayed two seconds when power is turned on.
5	cannot Write Non-MRS Tape	Error	Blinking	The tape in use not compliant to DDS. Use a DDS-compliant tape.
6	Clean Me	Error	Blinking	A high error ratio was detected during a read or write operation. Use a cleaning cartridge to clean the head of the drive.
7	Cleaning	Status	—	The cleaning cartridge has been loaded into the drive.
8	Config: xxy	Information	—	The configuration switch for the autoloader is set in hexadecimal numbers. This is displayed two seconds succeeding to the SCSI ID when power is turned on.

No.	Message	Type	Operator-alert lamp	Meaning
9	Close Door	Error	Blinking	The door of the magazine insertion slot of the autoloader is open. Close the door.
10	Drive comms Error	Error	On	Hardware error. Contact the store where you bought the system equipment or call the maintenance personnel.
11	Eject Fail	Error	Blinking	The eject command terminated abnormally. Use a new cartridge or attempt a forced ejection.
12	Eject Mag	Information	—	This is displayed when the eject button is pressed.
13	Erase	Status	—	The drive is erasing data from the tape.
14	Error x	Error	Blinking	The drive has been inoperable. Press the eject button to remove the cartridge and the magazine. If the error still recurs, contact the store where you bought the system or call the maintenance personnel.
15	ForceEject	Information	—	ction is in progress.
16	Format	Status	—	<ul style="list-style-type: none"> The SCSI command is being executed to create a tape with one or two partitions. The partition size of an existing two-partition tape is being changed.
17	FRU 1 Dead	Error	On	Hardware error. Contact the store where you bought the system equipment or call the maintenance personnel.
18	FRU 2 Dead	Error	On	Hardware error. Contact the store where you bought the system equipment or call the maintenance personnel.
19	FW Check	Status	—	The firmware upgrade data is being checked for compatibility.
20	FW Data Err	Error	Blinking	The firmware upgrade data is incorrect. Use the correct upgrade data.
21	FW Program	Status	—	The drive is being upgraded with new firmware.
22	FW Upgrade	Status	—	The firmware upgrade data is being downloaded from tape or the SCSI bus.
23	FW Read Fail	Error	Blinking	Upgrading of firmware failed because of a read error. Try again. If the error still recurs, contact the store where you bought the system or call the maintenance personnel.
24	FW Tape Write Protected	Error	Blinking	Upgrading of firmware failed because the tape is write-protected.
25	FW Write Fail	Error	Blinking	Upgrading of firmware failed because of a write error. Try again. If the error still recurs, contact the store where you bought the system or call the maintenance personnel.
26	Illegal FW	Error	Blinking	Upgrading of firmware failed because the firmware is incompatible. Use the upgrade data of the correct version.
27	Illegal HW	Error	Blinking	Upgrading of firmware failed because the firmware is incompatible. Use the upgrade data of the correct version.
28	Insert Mag	Status	—	No magazine has been inserted into the autoloader (Standby).

No.	Message	Type	Operator-alert lamp	Meaning
29	Load Fail	Error	Blinking	<ul style="list-style-type: none"> Loading the tape failed. A load command or change partition command to read the system area of the tape failed. Use a new cartridge.
30	Load Tape	Information	—	This is displayed when the tape load button is pressed.
31	Loading	Status	—	<ul style="list-style-type: none"> The cartridge is being moved from the magazine to the drive. The cartridge is being loaded by the drive.
32	Locate	Status	—	The drive is moving the tape to the point specified by the host.
33	Mag Check	Status	—	The autoloader is checking the magazine slot.
34	Mag Eject	Status	—	The autoloader is ejecting the magazine.
35	Mag Loaded	Status	—	The magazine has been loaded into the autoloader and checked.
36	Media Removal Prevented	Error	On	An attempt was made to eject a cartridge when cartridge ejection is inhibited. Use the SCSI command or reset to cancel the ejection inhibition.
37	New FW!!!	Status	—	Upgrading of firmware completed.
38	No EODmark	Error	Blinking	Data in the tape contains no EOD (A possible cause is that a write operation was performed when power supply was abnormal).
39	Partition	Status	—	The drive is switching a two-partition tape to a different partition.
40	Partition 1 too large	Error	On	Formatting failed because the size for one partition is too large. Decrease the partition size or use a longer tape.
41	Read	Status	—	The drive is reading data from tape.
42	Read Fail	Error	Blinking	Reading data failed. Reset the position of the data, and retry.
43	Ready xxm	Status	—	A cartridge has been loaded into the drive, and the tape motion command has become executable ("xxm" indicates the length of the tape loaded. For a write-protected cartridge, "Read Only" is displayed).
44	Rewind	Status	—	The drive is rewinding the tape to the beginning of the partition.
45	SCSI Error	Error	On	An SCSI command error has been detected. Check the SCSSI cable for connection, and retry.
46	SCSI ID: x	Information	—	Indicates the SCSI ID of the autoloader. This is displayed for two seconds succeeding to the product ID when power is turned on.
47	Search <<	Status	—	The drive is searching for a record, file mark, set mark, or BOD to the beginning of the tape.
48	Search >>	Status	—	The drive is searching for a record, file mark, set mark, or EOD to the end of the tape.
49	Select Tape	Information	—	This is displayed when the select button is pressed.

No.	Message	Type	Operator-alert lamp	Meaning
50	Self Test	Status	—	The autoloader is executing the power-on self-test.
51	SemiLoaded	Status	—	Although a cartridge is in the drive, it has not been loaded ("semi-loaded" status).
52	Stray Tape: Insert Empty Mag	Information	—	The autoloader does not contain a magazine for taking a cartridge from the drive. Insert a magazine with an empty slot.
53	Tape Fault	Error	Blinking	The drive contains a defective cartridge. Use a new DDS-compliant tape.
54	Tape Full	Error	On	A read, space, write, or write file mark command detected an unexpected EOP (For a read operation, this message sometimes indicates that data extends over the current and the succeeding cartridges).
55	Tape has DC Data	Error	On	Although compressed data was detected when a read command was executed, the drive settings do not correspond with decompression of data (The drive is factory-set to compressed mode. If it is unchanged, this error cannot occur).
56	Tape Position Lost	Error	Blinking	A write, read, space, or rewind command terminated abnormally. The current tape position is immediately after the erroneous data area. Reset the data position, and retry.
57	Tape Stuck	Error	Blinking	A cartridge is stacked in the drive. Attempt to forcibly eject the cartridge. If the error still recurs, contact the store where you bought the system or call the maintenance personnel.
58	Unloading	Status	—	<ul style="list-style-type: none"> • The drive is unloading a cartridge. • The drive is ejecting a cartridge and returning it to the magazine.
59	UpgradeErr	Error	Blinking	Upgrading firmware failed. Check the SCSI cable for connection, and retry.
60	Worn Media	Error	Blinking	A high error ratio was detected during a write operation. This indicates that the service life of the cartridge is coming to an end. Copy the data in the cartridge to a new one, and discard the old one.
61	Write x.y	Status	—	The drive is writing data to tape ("x.y":1 is the accumulated compression ratio since power-on or since the compression ratio was cleared).
62	Write Protected Tape	Error	Blinking	When a write, write file mark, or erase command was executed, processing could not be completed because the cartridge was write-protected. Cancel the write protection, and retry.
63	Write Fail	Error	Blinking	A write, write file mark, or erase command failed. Use a new cartridge.

Internal DLT (Optional)



1. Cartridge insertion slot

Insert a cartridge into the drive from this slot. See “Inserting and Ejecting a Cartridge” on page 22 for procedures of inserting and ejecting cartridges.

2. Unload button

Used to eject the cartridge.

3. Recording-density change button

This button cannot change the recording density applicable when data is written to a cartridge. Even if you press this button to change the recording density, the recording density for writing data is fixed at 20.0 format (the maximum recording density for uncompressed data is 20GB). Use ARCserve to specify whether compressed or uncompressed write is to be used. See the manual for ARCserve for details of specification methods. The initial status is compressed write (the Compress lamp is on).

4. Handle operation lamp

5. Cleaning tape use lamp

6. Tape-in-use lamp

7. Write inhibition lamp

The four lamps shown above indicate operation status as shown in the following table. When all the four lamps are on, a self-test is being conducted. When all four lamps are blinking, the drive is faulty.

Lamp	Lighting	Operation status
Handle operation lamp	Comes on in green	The cartridge insert/eject handle is usable.
	Goes off	The cartridge insert/eject handle is unusable.
Cleaning tape use lamp	Comes on in yellow	<ul style="list-style-type: none"> Cleaning required. The cartridge is broken.
	Goes off	<ul style="list-style-type: none"> Cleaning completed. Cleaning unnecessary.
Tape-in-use lamp	Blinks in yellow	The cartridge is in operation.
	Comes on in yellow	The cartridge is being loaded.
Write inhibition lamp	Comes on in orange	The cartridge is write-protected.
	Goes off	You can write data to the cartridge.

8. Recording density display lamps

The six lamps indicate operation status as shown in the following table. When all six lamps are blinking, the drive is faulty.

Lamp	Lighting	Operation status
2.6 ¹	Comes on in yellow	Data is recorded in the cartridge with the 2.6 format (up to 2.6GB).
	Blinks in yellow	The 2.6 format has been selected. ²
6.0 ¹	Comes on in yellow	Data is recorded in the cartridge with the 6.0 format (up to 6.0GB).
	Blinks in yellow	The 6.0 format has been selected. ²
10.0/15.0 ¹	Comes on in yellow	Data is recorded in the cartridge with the 10.0 format.
	Blinks in yellow	The 10.0 format has been selected. ²
20.0	Comes on in yellow	Data is recorded in the cartridge with the 20.0 format (up to 20GB).
	Blinks in yellow	The 20.0 format has been selected. ²
Compress	Comes on in yellow	Compressed write is performed. (10.0/15.0 and 20.0 format only)
	Goes off	Compressed write is not performed.
Recording density change ¹ (Density Override)	Comes on in yellow	The recording density has been changed.
	Goes off	The recording density has not been changed. (host selection)
	Blinks in yellow	The recording density is being changed.

¹ This function is not supported.

² Data is recorded in the cartridge with another recording density.

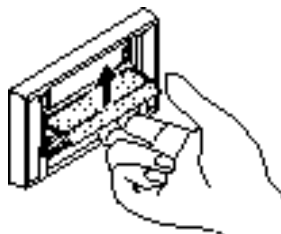
9. Cartridge insert/eject handle

Used to insert and eject a cartridge.

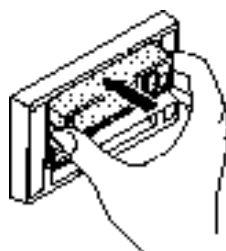
Inserting and Ejecting a Cartridge

Inserting a cartridge into the drive

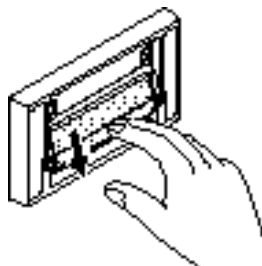
1. Check that the handle operation lamp is on, and lift the handle.



2. Insert the cartridge until it is stopped and fixed.



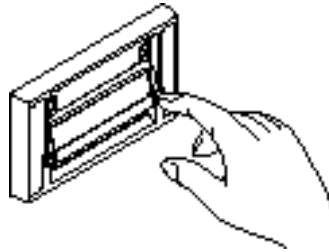
3. Press down the handle.



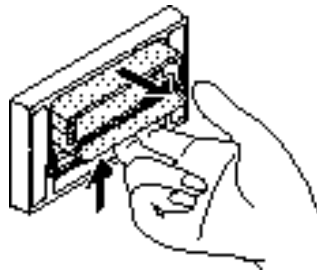
NOTE: When a cartridge is inserted and made operable, a particular operation sound is emitted.

Ejecting a cartridge from the drive

1. Press the Unload button. (While the tape is rewound, the tape-in-use lamp blinks.)

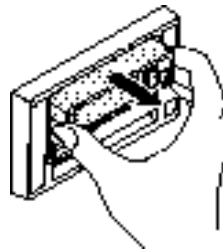


2. When the handle operation lamp comes on, lift the handle.

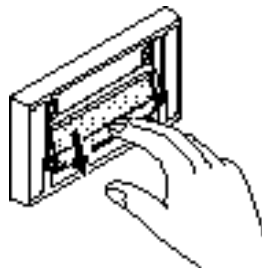


After lifting the handle, wait for a while before removing the cartridge.

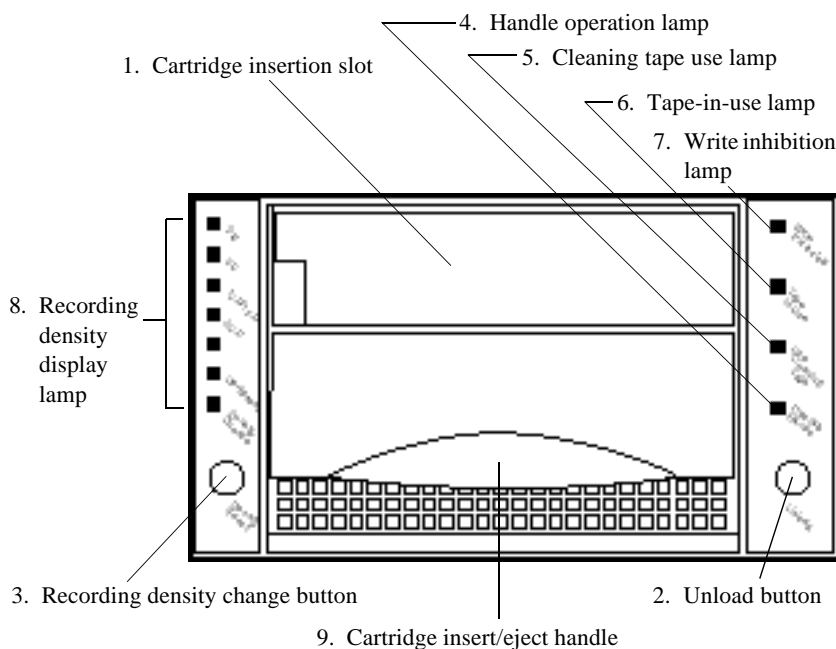
3. Remove the cartridge.



4. Press down the handle.



Internal DLT (Optional)



1. Cartridge insertion slot

Insert a cartridge into the drive from this slot. See “Inserting and Ejecting a Cartridge” on page 26 for procedures of inserting and ejecting cartridges.

2. Unload button

Used to eject the cartridge.

3. Recording-density change button

This button cannot change the recording density applicable when data is written to a cartridge. Even if you press this button to change the recording density, the recording density for writing data is fixed in 35.0 format (the maximum recording density for uncompressed data is 35GB). Use ARCserve to specify whether compressed or uncompressed write is to be used. See the manual for ARCserve for details of specification methods. The initial status is compressed write (the Compress lamp is on).

4. Handle operation lamp

5. Cleaning tape use lamp

6. Tape-in-use lamp

7. Write inhibition lamp

The four lamps shown above indicate operation status as shown in the following table. When all the four lamps are on, a self-test is being conducted. When all four lamps are blinking, the drive is faulty.

Lamp	Lighting	Operation status
Handle operation lamp	Comes on in green	The cartridge insert/eject handle is usable.
	Goes off	The cartridge insert/eject handle is unusable.
Cleaning tape use lamp	Comes on in yellow	<ul style="list-style-type: none"> Cleaning required. The cartridge is broken.
	Goes off	<ul style="list-style-type: none"> Cleaning completed. Cleaning unnecessary.
Tape-in-use lamp	Blinks in yellow	The cartridge is in operation.
	Comes on in yellow	The cartridge is being loaded.
Write inhibition lamp	Comes on in orange	The cartridge is write-protected.
	Goes off	You can write data to the cartridge.

8. Recording density display lamps

The six lamps indicate operation status as shown in the following table. When all six lamps are blinking, the drive is faulty.

Lamp	Lighting	Operation status
2.6 ¹	Comes on in yellow	Data is recorded in the cartridge with the 2.6 format (up to 2.6GB).
	Blinks in yellow	The 2.6 format has been selected. ²
6.0 ¹	Comes on in yellow	Data is recorded in the cartridge with the 6.0 format (up to 6.0GB).
	Blinks in yellow	The 6.0 format has been selected. ²
10.0/15.0 ¹	Comes on in yellow	Data is recorded in the cartridge with the 10.0 format.
	Blinks in yellow	The 10.0 format has been selected. ²
20.0	Comes on in yellow	Data is recorded in the cartridge with the 20.0 format (up to 20GB).
	Blinks in yellow	The 20.0 format has been selected. ²
35.0	Comes on in yellow	Data is recorded in the cartridge with the 35.0 format (up to 35GB).
	Blinks in yellow	The 35.0 format has been selected. ²
Compress	Comes on in yellow	Compressed write is performed. (10.0/15.0 and 20.0 format only)
	Goes off	Compressed write is not performed.
Recording density change ¹ (Density Override)	Comes on in yellow	The recording density has been changed.
	Goes off	The recording density has not been changed.(host selection)
	Blinks in yellow	The recording density is being changed.

¹ This function is not supported.

² Data is recorded in the cartridge with another recording density.

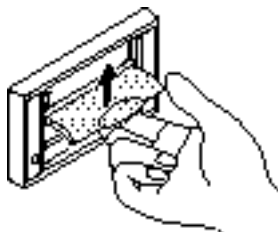
9. Cartridge insert/eject handle

Used to insert and eject a cartridge.

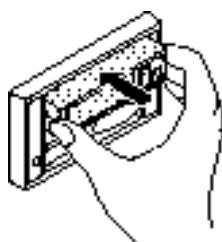
Inserting and Ejecting a Cartridge

Inserting a cartridge into the drive

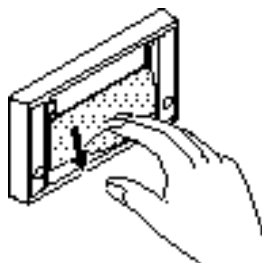
1. Check that the handle operation lamp is on, and lift the handle.



2. Insert the cartridge until it is stopped and fixed.



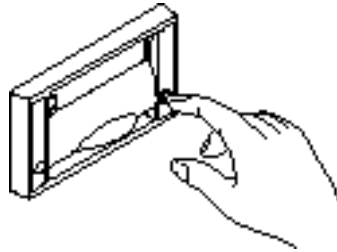
3. Press down the handle.



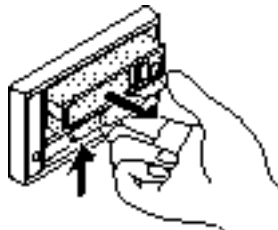
NOTE: When a cartridge is inserted and made operable, a particular operation sound is emitted.

Ejecting a cartridge from the drive

1. Press the Unload button. (While the tape is rewound, the tape-in-use lamp blinks.)

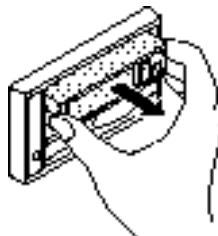


2. When the handle operation lamp comes on, lift the handle.

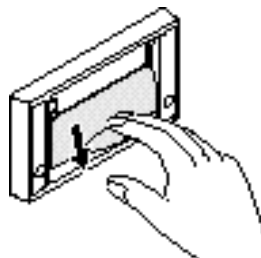


After lifting the handle, wait for a while before removing the cartridge.

3. Remove the cartridge.



4. Press down the handle.



Turning Power On/Off



Wait at least 5 seconds between power-on and power-off operations.



When operating on the power supply, follow the specified procedure to protect the system equipment from a failure.

Turning Power On

1. Turn on the peripheral devices.



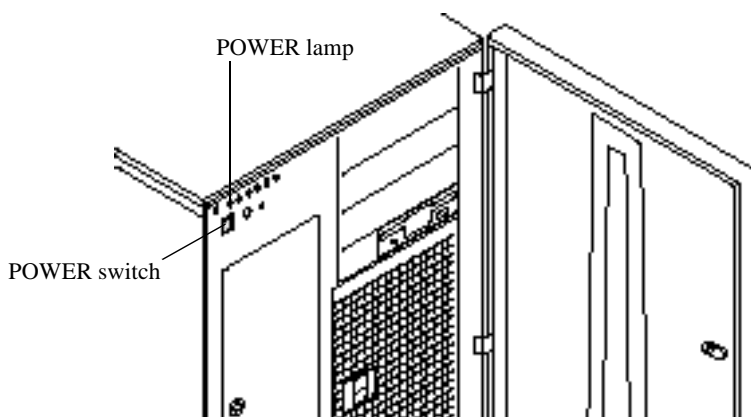
Some peripheral devices must be turned on after the system equipment. Refer to the manual attached to each peripheral device for details.

2. Open the front door of the system equipment.
3. Press the POWER switch on the front of the system equipment.

NOTE: Depending on the capacity of the memory DIMM installed in the system equipment, it might take several minutes for the initial screen to be displayed.

If power cannot be turned on or after processing stops for 10 minutes or more at the time of booting the OS, press the POWER switch to turn off, and then turn on the power.

The POWER switch stores power-on/off information. When a power outage occurs when you use a UPS, you can start the system equipment immediately after power is restored.



Turning Power Off



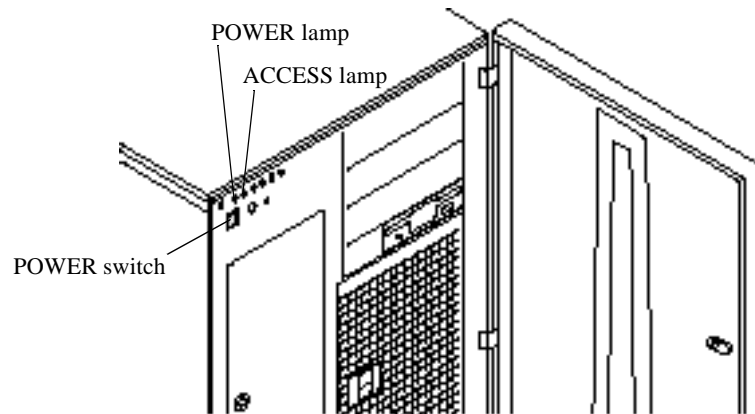
- Before turning power off, check that all devices connected have been stopped.
- If you use an OS requiring shutdown operation, be sure to perform shutdown operation before turning the power off.

1. Turn off the peripheral devices.
2. Open the front door of the system equipment, and check that the ACCESS lamp on the system equipment is off.
3. Press the POWER switch on the system equipment.



Some peripheral devices must be turned on after the system equipment. Refer to the manual attached to each peripheral device for details.

If power does not turn off for a while after you pressed the POWER switch, cache protection is probably on. If such is the case, the power will turn off in time.

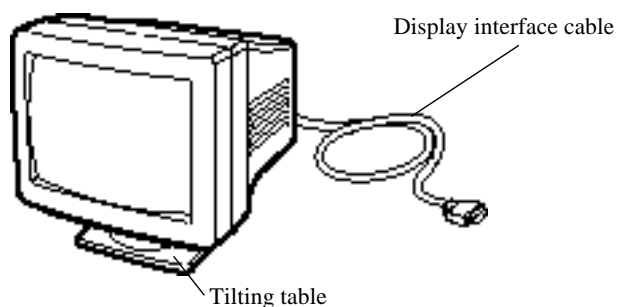


Connecting External Devices

This section explains how to connect a display, a keyboard, a mouse, a power cord, an uninterruptible power supply unit (UPS), and an external disk array unit.

Connecting Displays

This section explains how to connect displays to the system equipment.

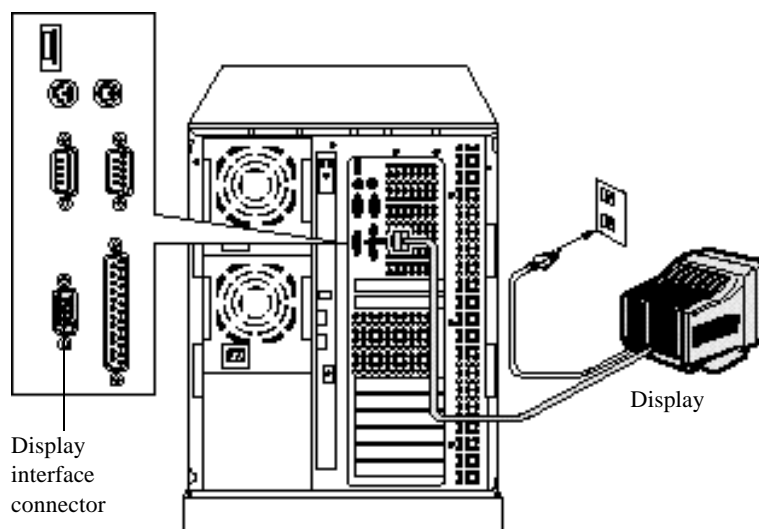


1. Connect the display interface cable with the display interface connector on the back of the system equipment.
2. Plug in the power cord of the display.





Use a ground-type two-pole socket with a ground terminal.

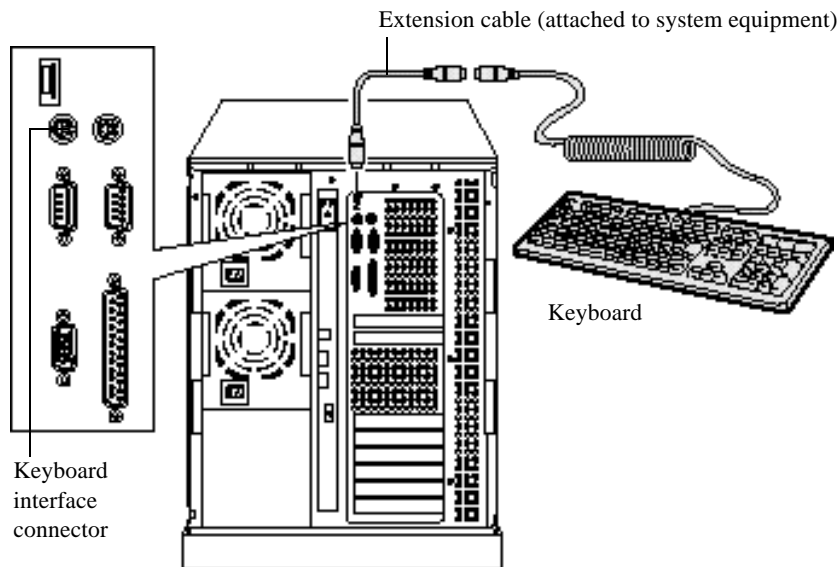
If you use a two-pole power cord with a grounding wire, attach the grounding wire to the ground terminal, then put in the power plug.



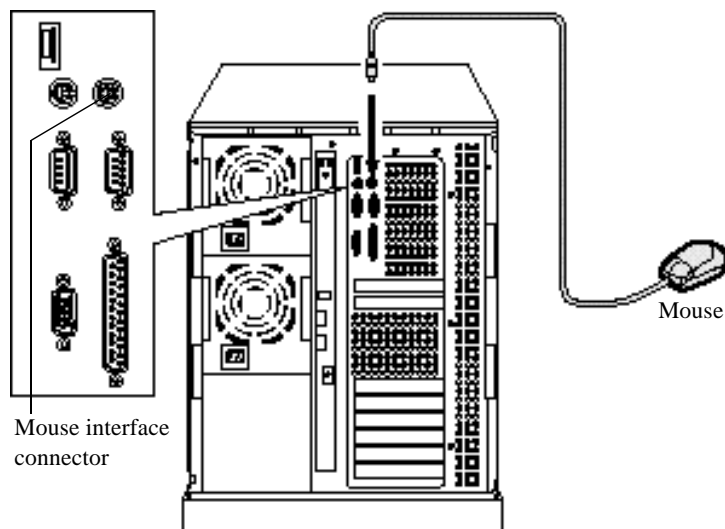
Connecting a Keyboard or Mouse

Although the interface connector for the keyboard and that for the mouse are of the same shape, connect the keyboard with the connector having  mark, and connect the mouse with the connector having  mark. Connect the keyboard with the system equipment via the extension cable (attached to the system equipment). Fix ferrite core (attached to the system equipment) onto the portions of the keyboard and the mouse that connect to the system equipment.

Connecting a Keyboard

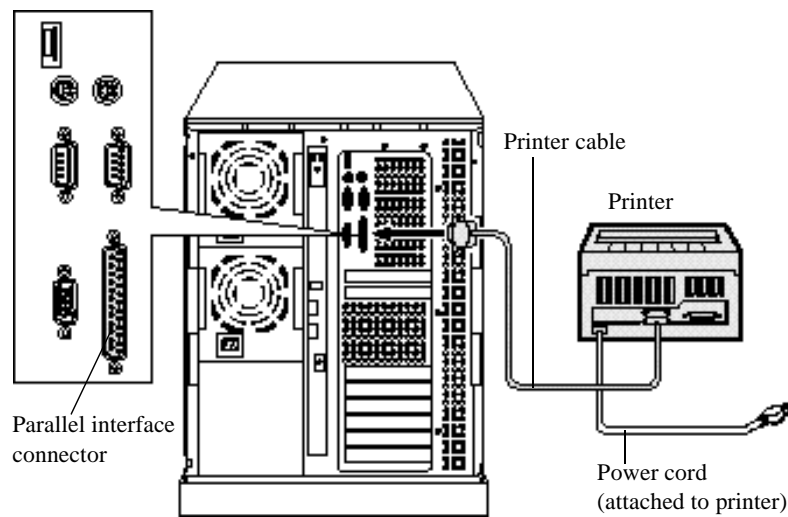


Connecting a Mouse



Connecting a Printer

The following is an example of connecting a printer:



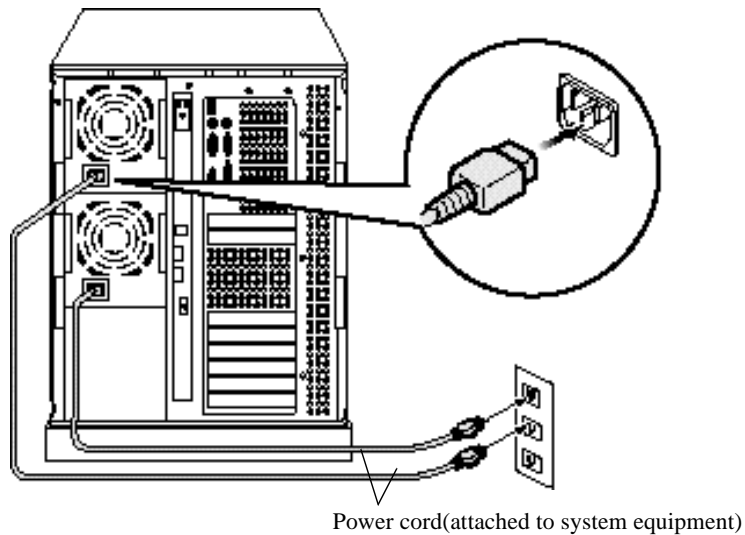
Connecting a Power Cord



Be sure to plug in all power cords to the same power supply system.
Be sure to connect to a socket with a grounding terminal.

When installing an option device to the system equipment, open the front door, then remove the cover off the system equipment. When installation is finished, reattach the cover.

NOTE: If you install an optional third power supply as a redundant power supply, connect one more power cord.

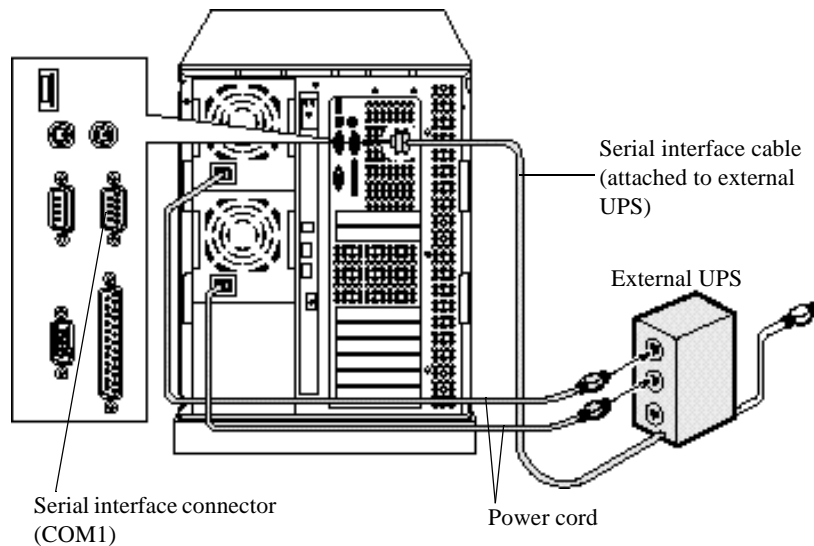


Connecting an Uninterruptible Power Supply Unit (Optional)

An uninterruptible power supply (UPS) unit is intended to supply power when power supply to the system equipment is stopped because of a power outage or a tripping of the circuit breaker.

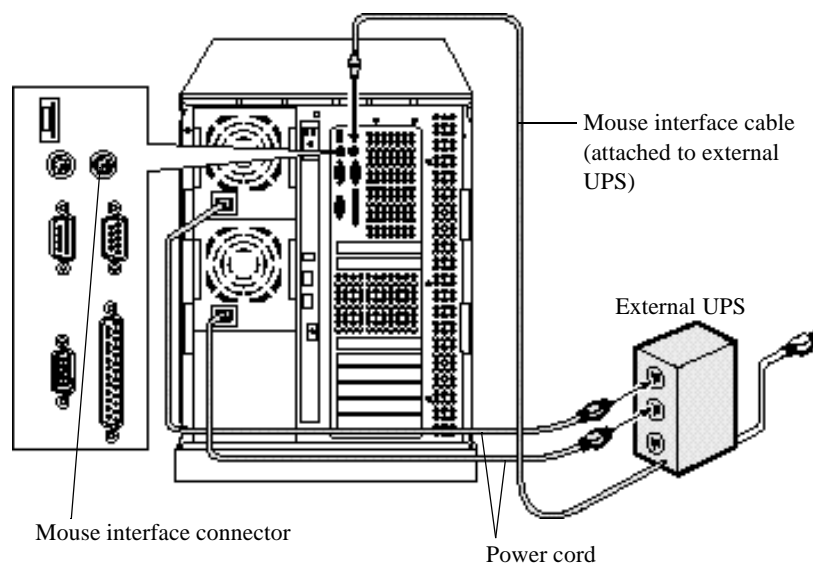
The Hitachi PC VisionBase 8450H/R Server allows the use of an external UPS. Use a UPS suited for your OS. Refer to the manual attached to the UPS for hardware settings.

Connecting to a Serial Interface



NOTE: You need also to make settings required to use the serial interface in the Setup Menu.
You can also connect to a serial interface connector (COM2).

Connecting to a Mouse Interface (Optional)



If you connect a UPS to the mouse interface, the mouse is unusable.

NOTE: You need also to make settings required to use the serial interface in the Setup Menu.

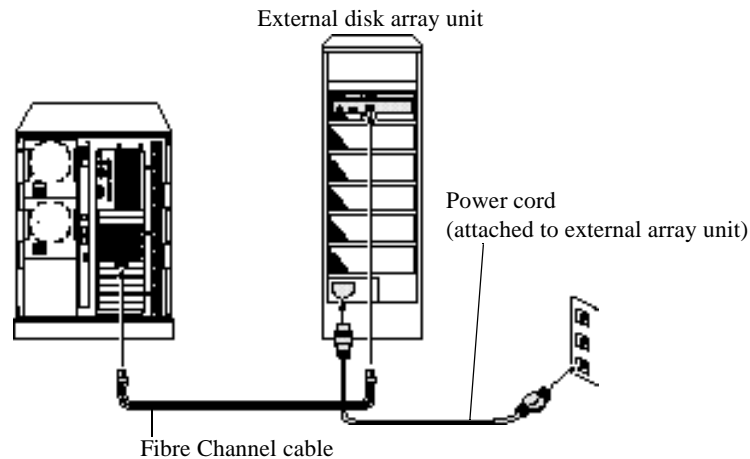
Connecting an External Disk Array Unit (Optional)

This section explains how to connect an external disk array unit.

Use as an Extended Disk Array

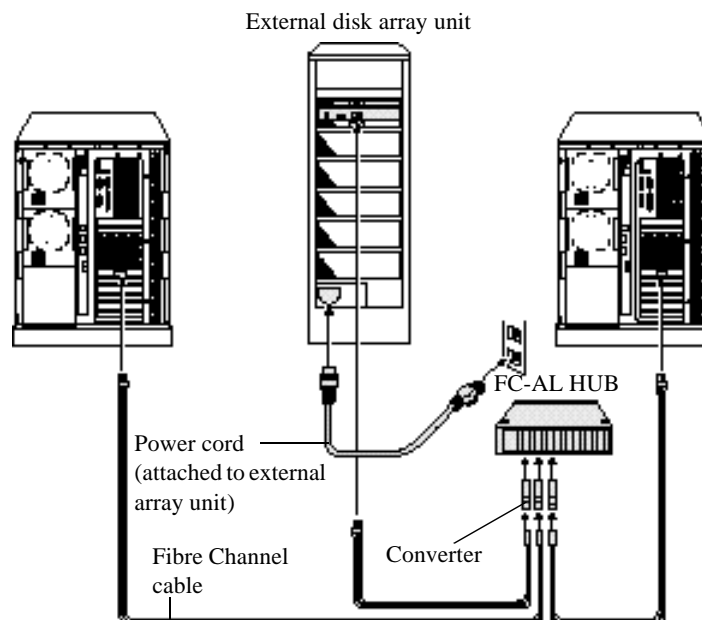
NOTE: Ask the store where you bought the system equipment for recommended options for connecting external disk array units.

The Fibre Channel board installed in the system equipment is connected with an external disk array unit using a Fibre Channel cable.



Use as a Shared Disk for a Cluster System

The Fibre Channel board is connected with an external disk array unit via FC-AL HUB using a Fibre Channel cable. A converter is connected between the FC-AL HUB and the Fibre Channel cable.



3: Installing Optional Devices

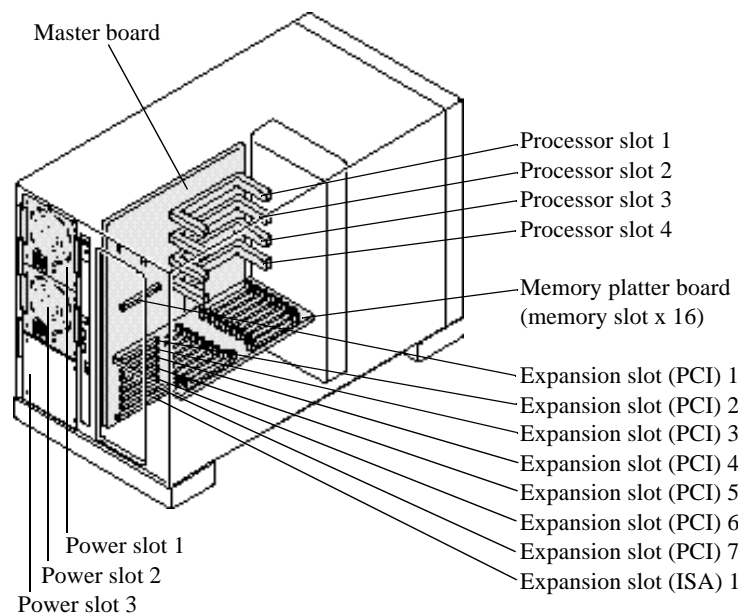
This chapter explains how to install internal option devices to the system equipment.

Installing Locations for Option Devices

This section explains where in the system equipment you can install what internal devices.

Expansion Slots

The Hitachi PC VisionBase 8450H/R Server has expansion slots as shown in the following diagram:



The following table shows the use of each slot:

Slot name	Qty	Use
Processor slot	4	Pentium II Xeon processor is installed.
Memory slot	16	The memory platter board contains 16 slots. Memory DIMMs are installed in units of 4 pieces.
Expansion slot (PCI)	7	Extended boards of PCI specifications are installed.
Expansion slot (ISA)	1	Extended boards of ISA specifications are installed.
Power slot	3	Power units are installed.

NOTE: Expansion slot (PCI) 7 and expansion slot (ISA) 1 are shared.

The following table shows extended boards installable in each expansion slot.

Legend: Y: Installable, N: Not installable

Part name	Usable expansion slot							
	PCI							ISA
	1	2	3	4	8	9	7 ⁷	1 ⁷
Disk array controller board ¹	N	N	N	Y	N	N	N	-
Fibre Channel board ^{2, 3}	N	Y	Y	N	N	N	N	-
LAN board ⁴	Y	Y	Y	N	Y	Y	Y	-
Multi-communication box ¹	N	Y	Y	N	N	N	N	-
ISDN board ^{1, 5}	N	Y	Y	N	N	N	N	-
SVP board ^{1, 5}	N	Y	Y	N	Y	N	N	-
Communication board ^{1, 6}	-	-	-	-	-	-	-	Y
ISDN board set ^{1, 6}	-	-	-	-	-	-	-	Y

1 Only one board can be installed.

2 Installable when an external disk array unit [DF350] is connected.

3 Up to two pieces can be installed when a dual controller for an external disk array unit is supported.

4 Up to six boards can be installed.

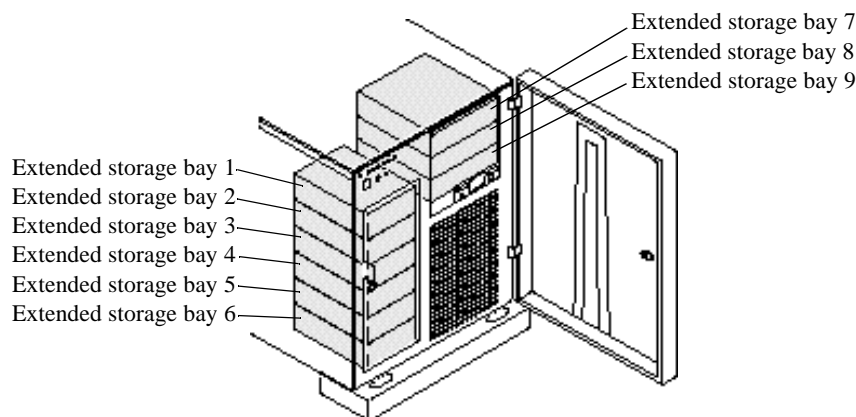
5 Usable in a Windows NT environment.

6 Usable in a CommuniNet gateway environment.

7 Expansion slot (PCI) 7 and expansion slot (ISA) 1 are shared. Only one of them can be used at a time.

Extended Storage Bays

Extended storage bays provide space for installing SCSI devices such as internal hard disk and internal CD-ROM. There are nine extended storage bays; extended storage bays 1 to 6 are solely used for hard disk, extended storage bays 7 to 9 are solely for removable devices such as internal CD-ROM.



The following table shows SCSI devices installable for each extended storage bay.

Legend: Y: Installable, N: Not installable

Part name	Usable extended storage bay								
	1	2	3	4	5	6	7	8	9
Internal hard disk (9GB) ¹	Y	Y	Y	Y	Y	Y	-	-	-
Internal hard disk (18GB) ¹	Y	Y	Y	Y	Y	Y	-	-	-
Internal CD-ROM (standard)	-	-	-	-	-	-	Y	Y	N
Internal DAT (optional)	-	-	-	-	-	-	N	Y	Y
Internal DAT changer ² (optional)	-	-	-	-	-	-	N	Y	
Internal DLT ² (optional)	-	-	-	-	-	-	N	Y	

¹ Installable as a data disk, a reserve disk, or a replacement disk for a disk array.

² Occupies two extended storage bays.

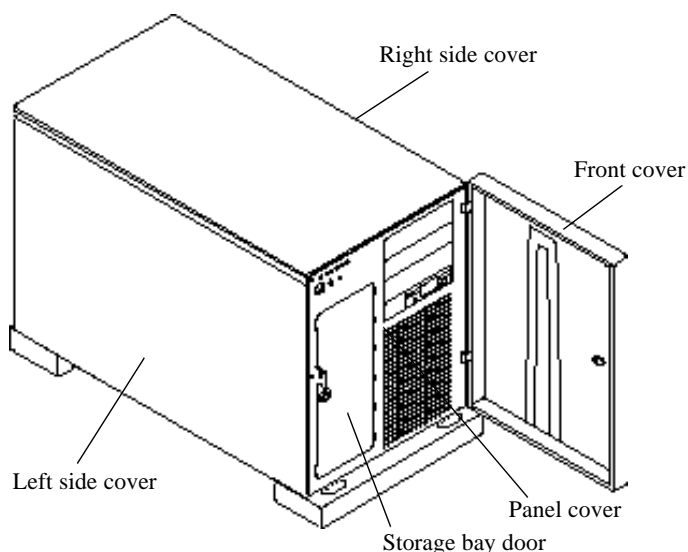
Removing and Installing Covers

Before installing optional devices to the system equipment, open the front door, then remove the outer covers from the system equipment. When you completed installation of option devices, attach the covers again.



Be careful of electric shock. Before opening the cover, unplug the power cord.

Do not use the system equipment with its covers removed or with the storage bay door open, because electric shock or a failure might occur.

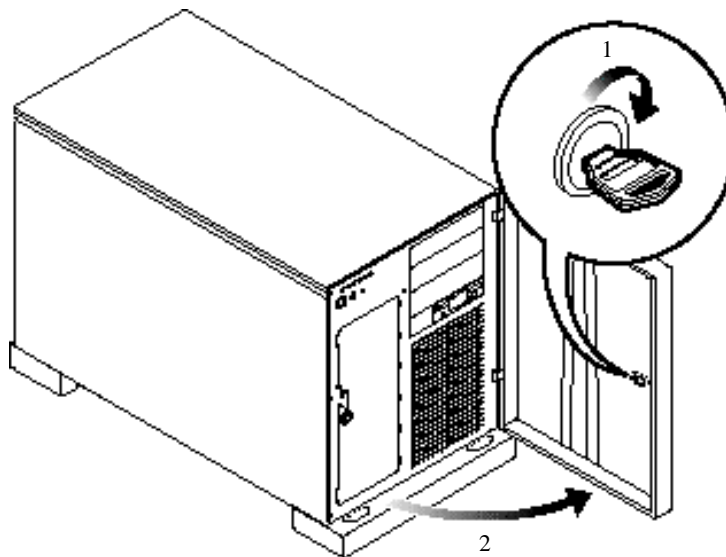


Removing the Cover

Before installing a SCSI device or an extended board within the system equipment, you need to remove the upper and side covers and panel cover in the following steps.

Opening the Front Door

1. Insert the door key (for front door) into the front door, then turn it 90 degrees clockwise.
2. Pull and open the front door.



Opening the Storage Bay Door



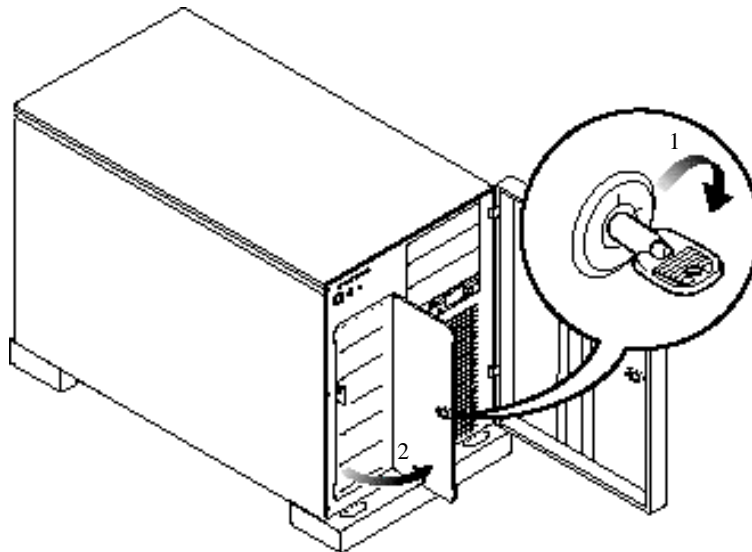
Too much force on the storage bay door will deform it.

Before installing an internal hard disk into an extended storage bay, or replacing a failed disk in a disk array, or removing a panel cover, open the storage bay door.

1. Insert the dedicated door key into the storage bay door, and turn it clockwise.
2. Open the storage bay door by pulling it to the front.



When opening or closing the storage bay door, be sure to do it gently. If you open or close the door too strongly, internal hard disks might malfunction because of the shock.



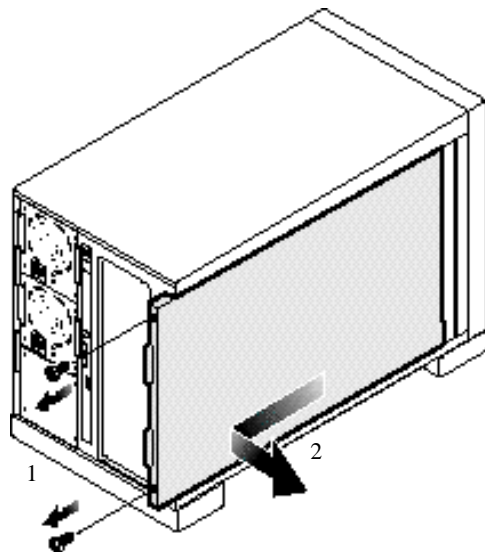
Removing the Side Covers

When installing a SCSI device into external storage bays 7 to 9, remove the right side cover.

When installing a processor, a memory DIMM, or an extended board, remove the left side cover.

NOTE: The right and left side covers should be removed basically in the same way. This section explains only the left side cover.

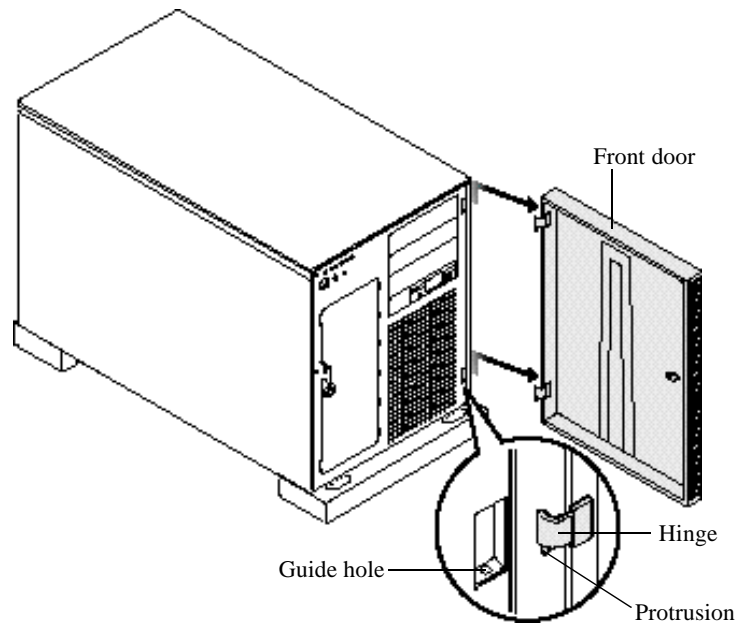
1. Remove two mounting screws from the back of the system equipment.
2. Holding the center of the left side cover, pull the cover to the rear several centimeters, then extract it to the outside.



Removing the Panel Cover

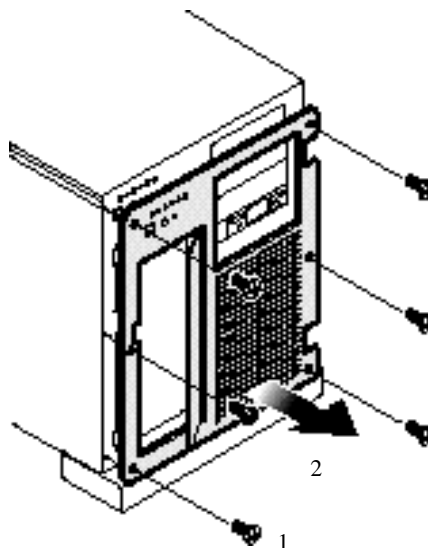
When installing a SCSI device into extended storage bays 7 to 9, remove the panel cover. Before removing the panel cover, you need to remove the front door.

1. Open the front door 90 degrees or more, then extract it by lifting it a little.



2. Remove six mounting screws from the front of the system equipment.
3. Extract the panel cover by pulling it to the front.

NOTE: While removing the panel cover, keep the storage bay door open.

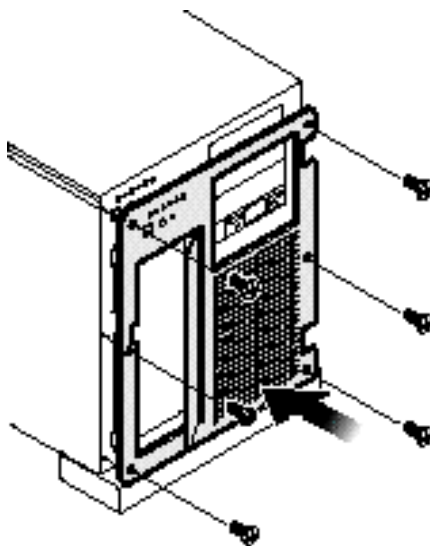


Installing Covers

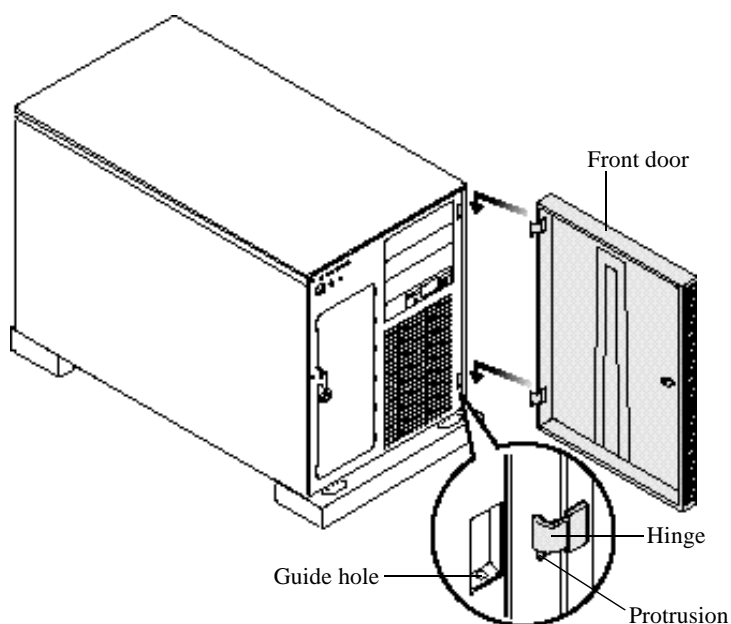
Install covers in the reverse procedure to their removal. (Explanation of how to close the front door and storage bay door is omitted here.)

Installing the Panel Cover

1. Fix the panel cover with six mounting screws.



2. By aligning each protrusion of the hinge on the front door with the corresponding guide hole on the system equipment, fix the front door onto the system equipment.

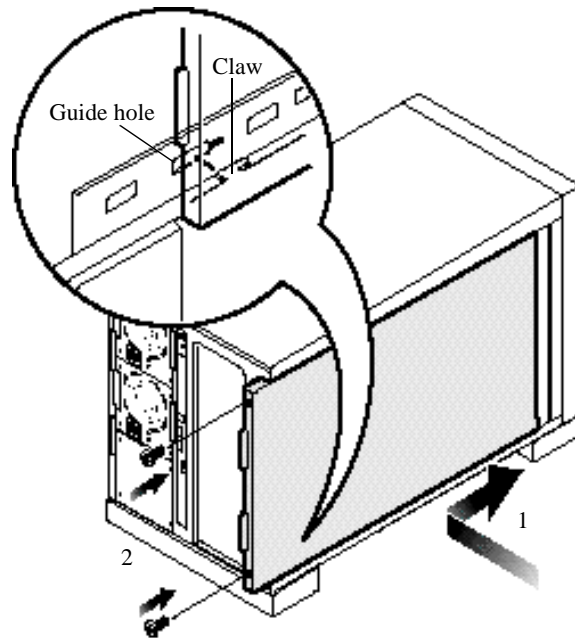


Installing the Side Covers

Before installing the side covers, check that no part of a cable is coming out. If you install covers with a cable coming out, that cable might be disconnected.

NOTE: The right and left side covers should be installed basically in the same way. This section explains only the left side cover.

1. Fit the claws on the upper and lower portions of the left side cover into the guide holes on the system equipment, then push in the cover while holding the center of the cover.
2. Fix the cover with two mounting screws.



Installing Redundant Power Supply

The Hitachi PC VisionBase 8450H/R Server allows you to install an optional third power supply unit to implement redundant power configuration. In such redundant power configuration, even if one of the power units fails, the remaining two power units can supply sufficient power, enabling you to keep on operating.

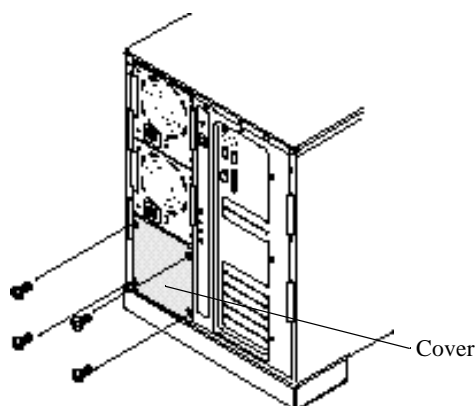
NOTE: When you install an option power unit, you need to add one outlet (three in total).



Before you start operation, turn off the POWER switch of the system equipment, and unplug the power cord.

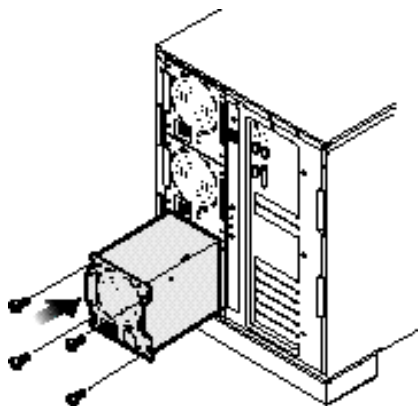
1. Remove the cover of power slot 3 on the back of the system equipment by removing four mounting screws on the cover.

NOTE: Store the removed covers properly.



2. Insert the power unit by aligning it with the guide holes, then fix it with four mounting screws.

NOTE: Make sure that the power unit is fully inserted into the system equipment.

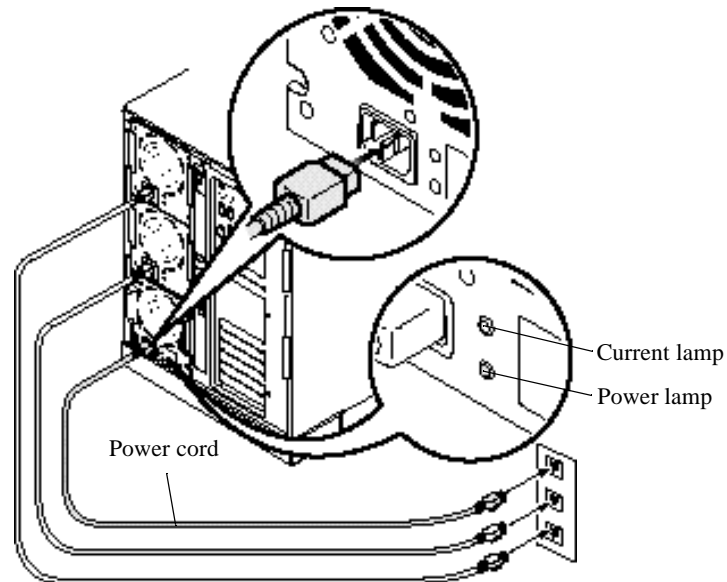


3. Connect the power cord (attached to the power unit), and plug in.

NOTE: All the three power cords must be plugged in.



Be sure to plug in to an outlet with a ground terminal.



4. Turn on the POWER switch on the front of the system equipment.
5. Check the lamps of the power unit.
 - Both the power lamp (green) and the current lamp (green) are on.
The power unit is normal.
 - One or both of the power lamp (green) and the current lamp (green) are off.
Check whether the power unit is installed properly. If both lamps still do not come on, contact the shop where you bought the power unit or call the maintenance personnel.
6. Turn off the POWER switch.
7. Unplug the power cord.

Installing SCSI Devices

This section explains how to install SCSI devices (including internal hard disks, internal CD-ROMs, and internal DATs).



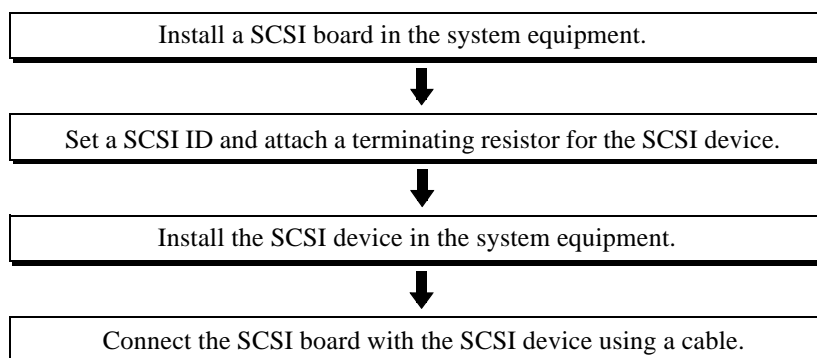
Before changing the configuration of the system equipment (such as internal SCSI devices or extended boards), be sure to unplug the power cord, and wait at least 30 seconds. In some rare cases, the setup data might be changed. In such cases, turn off the system equipment, turn it on, then change the settings on the Setup Menu.

Basics on SCSI Devices

This section explains basic knowledge required for installing SCSI devices.

Outline of Operation

Installation of SCSI devices can largely be divided into the following four steps:



Daisy Chain and Terminating Resistor

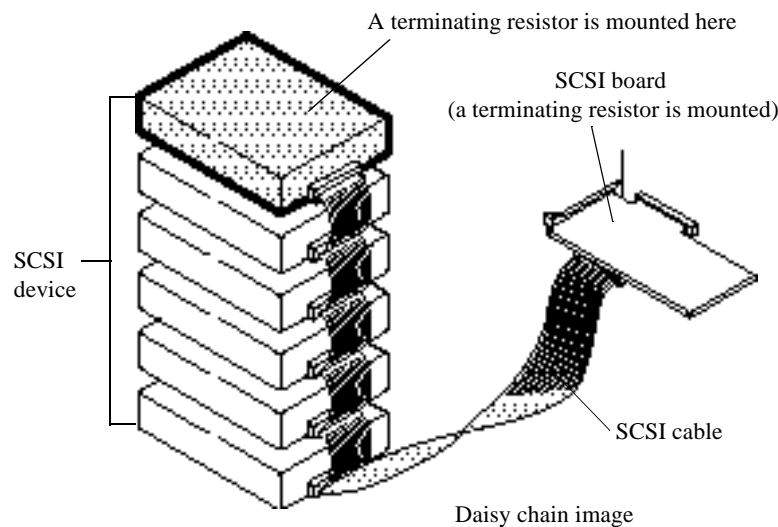
A maximum of seven SCSI devices can be serially connected to one SCSI controller. Such a serial connection is referred to as a daisy chain connection. The SCSI devices at both ends of the daisy chain require a resistor called a terminator (terminating resistor). If you attach a terminator onto another SCSI device, that SCSI device will not operate normally.



In Hitachi PC VisionBase 8450H/R Server, up to six SCSI devices can be connected to one controller.

NOTE: A terminating resistor is installed for the following devices supplied as standard in the Hitachi PC VisionBase 8450H/R Server: the SCSI controller, the disk array controller board, and the platter board on which internal hard disks are to be installed.

In Hitachi PC VisionBase 8450H/R Server you need not mount a terminating resistor onto removable devices; the SCSI cable to be connected already has one mounted.



SCSI IDs

SCSI IDs are numbers used to identify SCSI devices; 0 to 6 are used. Make sure that 0 is used for the SCSI ID for your starter hard disk. Be sure to set SCSI IDs so that there is no duplication within the group of SCSI devices (those within the same daisy chain) connected with the same SCSI controller.



If the same SCSI ID is used the more than one SCSI device in a group of SCSI devices connected to the same SCSI controller, the SCSI devices will malfunction.

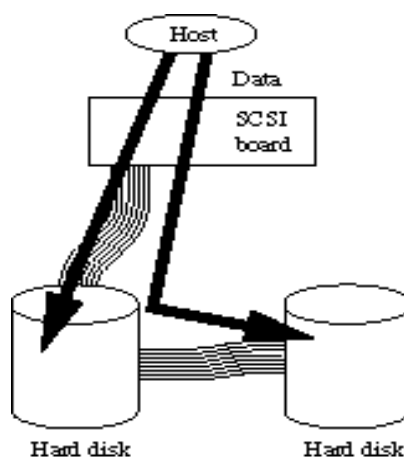
NOTE: The SCSI ID for the SCSI controller is set to 7.

Mirroring and Duplexing

You can save data in two hard disks to prepare for a possible hard disk failure. This dualized data structure is useful in preventing data loss, because even if one hard disk fails, the other hard disk is still usable. There are two types of dualizing data, mirroring and duplexing.

Mirroring

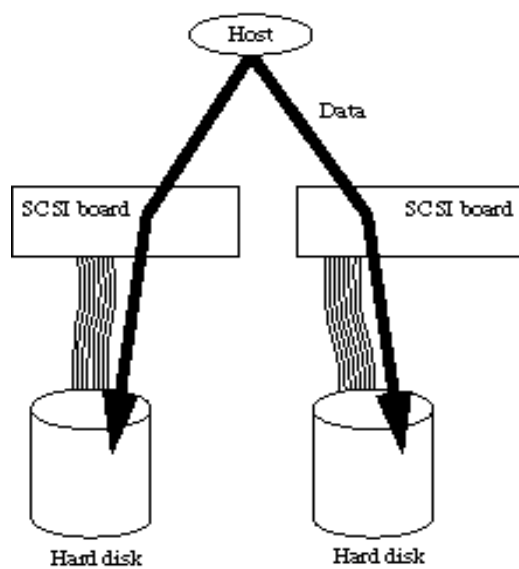
The same data is stored in two hard disks connected to the same SCSI board. Storing data requires more time than non-dualized structure, because data is written successively onto the two hard disks.



Duplexing

Each of the two SCSI boards is connected to its hard disk into which the same data is written and stored at the same time, resulting in a smaller reduction in processing speed.

NOTE: Hitachi PC VisionBase 8450H/R Server does not allow duplexing.



Disk Array

What is a disk array?

“Disk array” refers to the use of two or more hard disks concatenated into one logical disk. It is also called Redundant Arrays of Inexpensive Disks (RAID).

Disk array has two main advantages:

- Increasing I/O performance

By dividing data into several units and distributing them to hard disks within an array (called “data striping”), I/O performance as the entire array is better than the I/O performance obtained when each disk is separately used.

- Restoring data

Creation of an array parity enables you to restore data even if one of the hard disks within the array should fail, thereby preventing data from being lost.



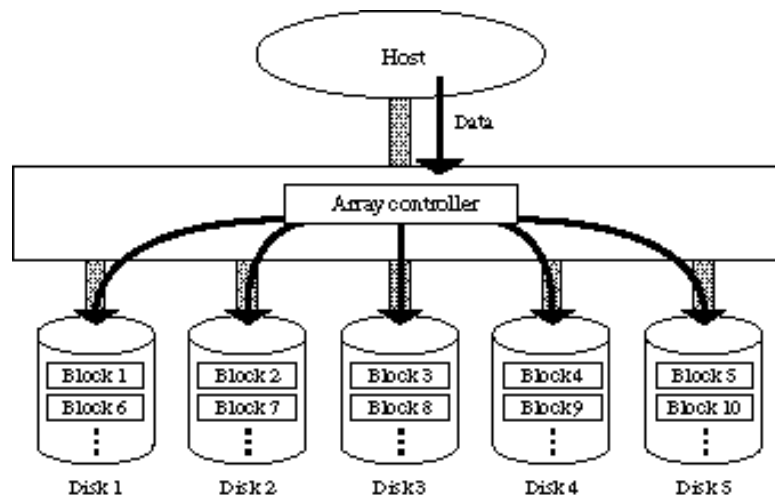
Even if you use disk arrays, you cannot prevent data loss due to non-hard-disk failures, software crash, or incorrect manipulation. Make sure you create backup copies for system data in case of unexpected failures.

Types of Disk Arrays

Disk arrays are classified into six types (0 to 5) according to the RAID level. Of the six types, only RAID0, RAID1, RAID3, and RAID5 are currently usable. The method and features of each RAID level are shown below.

NOTE: Hitachi PC VisionBase 8450H/R Server supports RAID0, RAID1, and RAID5 as well as RAID7, which is used to install hard disks (used discretely) in the disk array controller.

RAID0

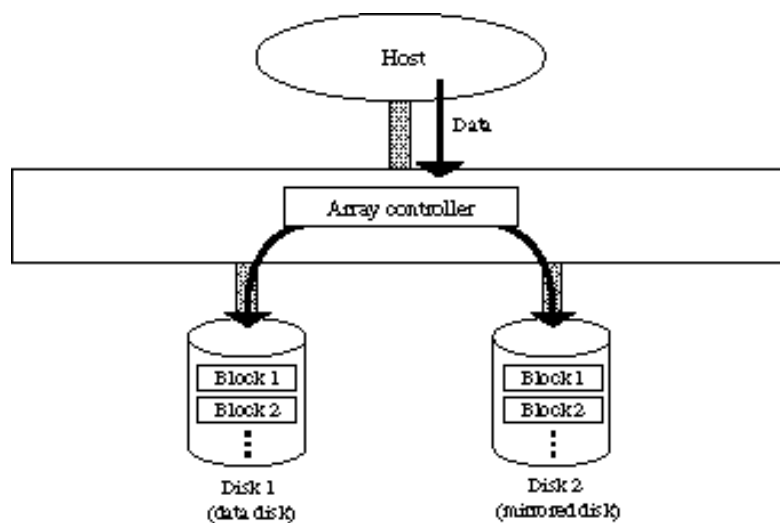


Data is striped extending over several hard disks.

Advantage:	Throughput increases, especially for large-volume files.
Disadvantage:	No array parity is created; therefore, if at least one of the hard disks within the array fails, all data will be lost.

Number of hard disks required: 2 (min.) to 6 (max.)

RAID1

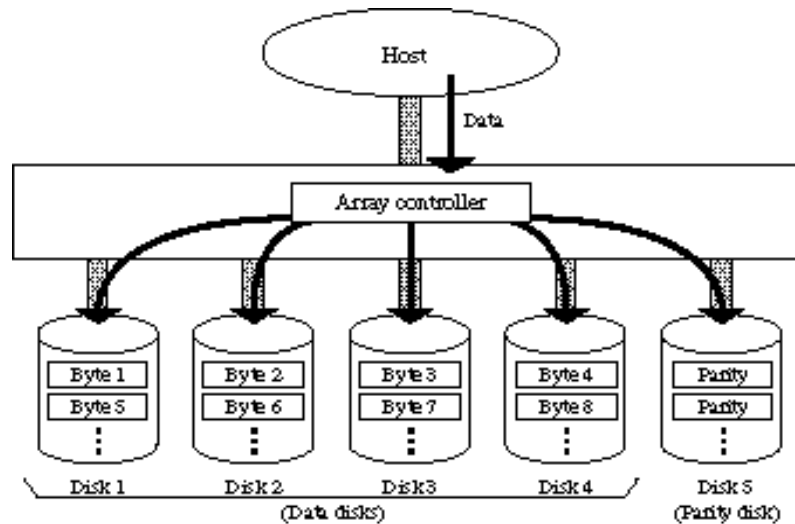


Data is stored into two hard disks, a data disk and a mirrored disk, in the same way.

Advantage:	100% data redundancy is ensured. Even if one of the two hard disks fails, it will be switched to the other hard disk to continue read/write operation.
Disadvantages:	The hard disk capacity required doubles, because a mirrored disk with the same capacity is required. A read/write operation during data rebuilding will result in lower performance.

Number of hard disks required: 2 (fixed)

RAID3

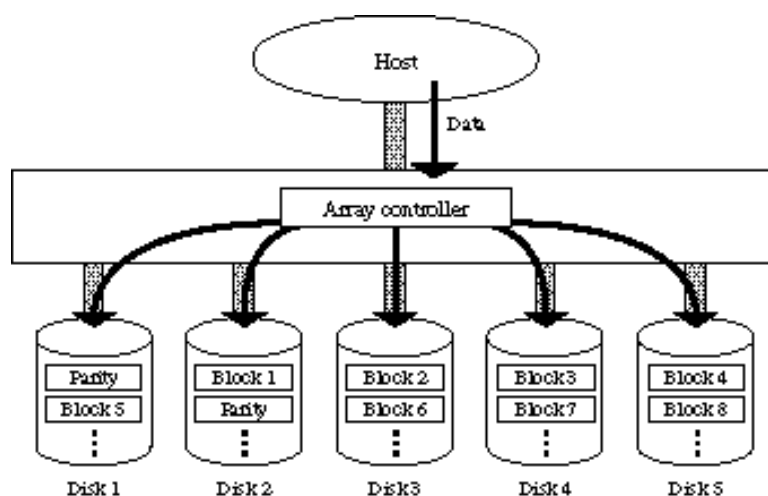


Data is striped in bytes into data disks. Array parities are stored in the parity disk.

Advantages:	<ul style="list-style-type: none"> Capacity-to-cost ratio is improved as compared with RAID1. Data redundancy is ensured by distributing data to several hard disks; therefore, each hard disk can perform read/write operation independently. This type of disk array is useful for transferring large data because data is striped in bytes. If a hard disk within the array fails, the lost data is computed based on the array parities, enabling the read/write operation to continue. By replacing the hard disk, you can rebuild the data without interrupting your current task.
Disadvantages:	<ul style="list-style-type: none"> This type of disk array is unsuitable for transaction processing (unsuitable for PC server OS processing), because data is striped in bytes; therefore, the number of accesses increases for transfer of small data. Array parities are created during write operation, so efficiency in write operation is not good as RAID0. A read/write operation during data rebuilding will result in lower performance.

Number of hard disks required: 3 (min.) to 6 (max.)

RAID5



Data, together with array parity, is striped in blocks, extending over all hard disks.

Advantages:	<ul style="list-style-type: none"> Capacity-to-cost ratio is improved as compared with RAID1. Data redundancy is ensured by distributing data to several hard disks; therefore, each hard disk can perform read/write operation independently. This type of disk array is useful for transaction processing because data is striped in block. If a hard disk within the array fails, the lost data is computed based on the array parities, enabling the read/write operation to continue. By replacing the hard disk, you can rebuild the data without interrupting your current task. Because array parities are distributed to each hard disk, you can have the advantages of parallel processing through independent access to the hard disks when writing data.
Disadvantages:	<ul style="list-style-type: none"> Array parities are created during write operation, so performance for write operation is not as high as RAID0. A read/write operation during data rebuilding will result in lower performance.

Number of hard disks required: 3 (min.) to 6 (max.)

Functions of Disk Array

Degraded mode

The RAID3 or RAID5 disk array enables you to keep on using the array as usual even if one of the hard disks fails. When a disk array operates with one failed hard disk, the operation is referred to as degraded-mode operation. When a read or write operation is requested, the array disk controller computes data in the failed disk based on the data in the active disks and array parities. However, because of this data computation, processing efficiency decreases as compared with usual situations.

Rebuilding data

In the RAID1, RAID3, or RAID5 disk array, after a failed disk is replaced, the array controller automatically restores data and stores it in the new disk based on the data in the mirrored disk and parity data. This is called “rebuilding data”. You can keep on your task while data is being rebuilt, but processing efficiency decreases, as in degraded mode.

During a degraded-mode operation, an additional hard disk failure will disable the disk array to rebuild data, resulting in loss of all data. Be sure to replace the failed disk immediately and rebuild data.

NOTE: The RAID0 disk array cannot rebuild data because it does not dualize data nor create parities.

Hot plug

When the disk array operates in degraded mode, you need to replace the failed disk as early as possible. However, turning off the system equipment is inconvenient because it is time-consuming and you need to stop the operation.

The function of “hot plug” (also called “hot swap”) is the solution to this problem. With this function, you can replace hard disks while the system equipment is powered.

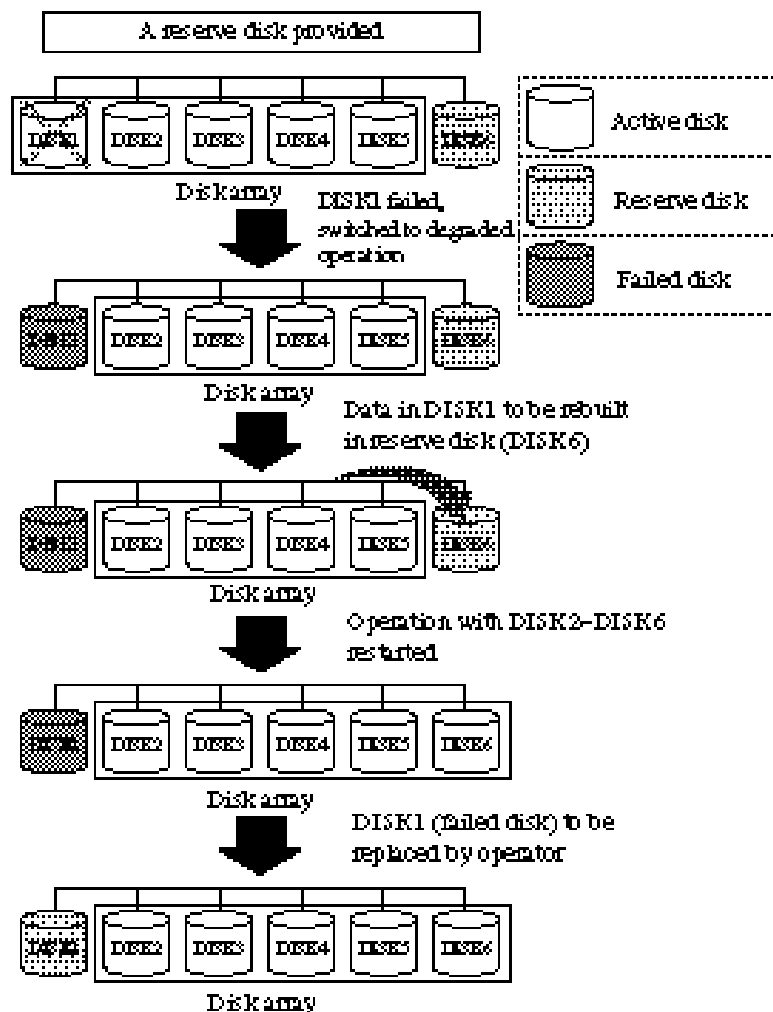
Hot spare

If the RAID1, RAID3, or RAID5 disk array fails, you need to replace the failed disk in order to recover to the normal status. By installing a reserve disk (with no data) in the disk array, you can have data automatically restored to the reserve disk. This reserve disk is called “hot spare” because it is provided for replacement at any time. The array controller’s function of automatically restoring data to the hot spare is called “standby replacement”.

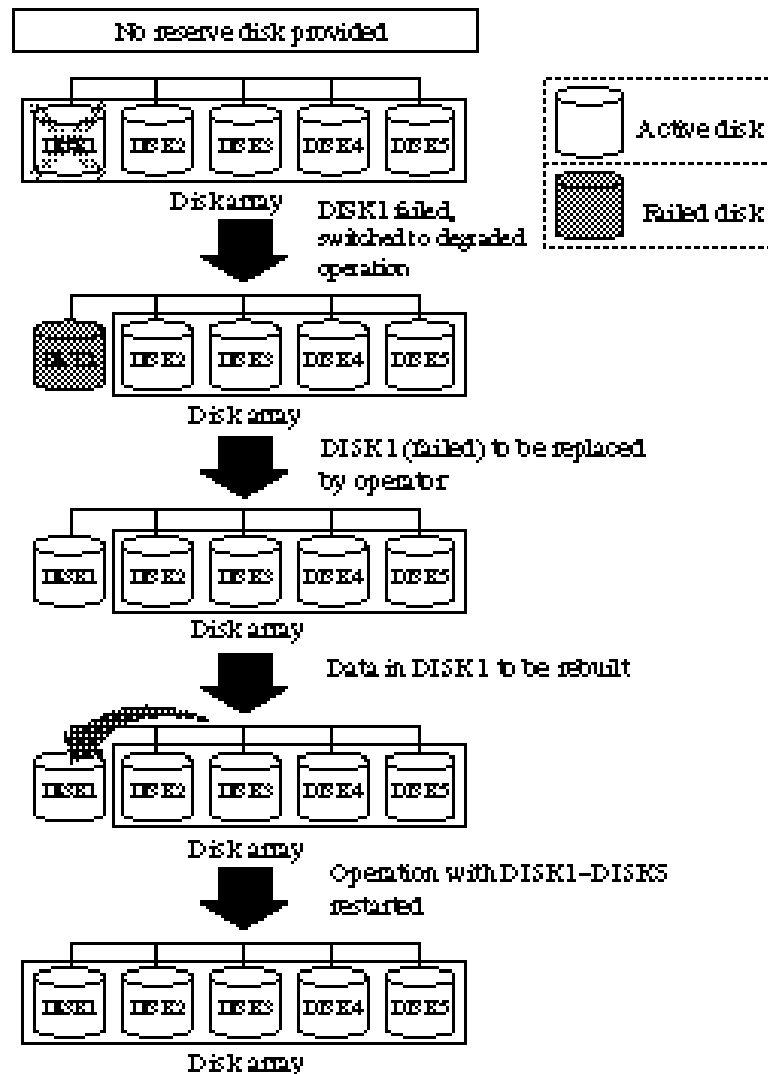
Flow of failure recovery operation

This section explains the flow of failure recovery for the RAID5 disk array that operates with five disks, using two examples, one with a reserve disk and the other with no reserve disk.

- When a reserve disk is used



- When no reserve disk is used

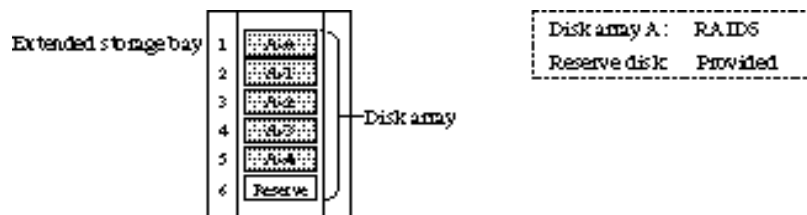


Building a Disk Array

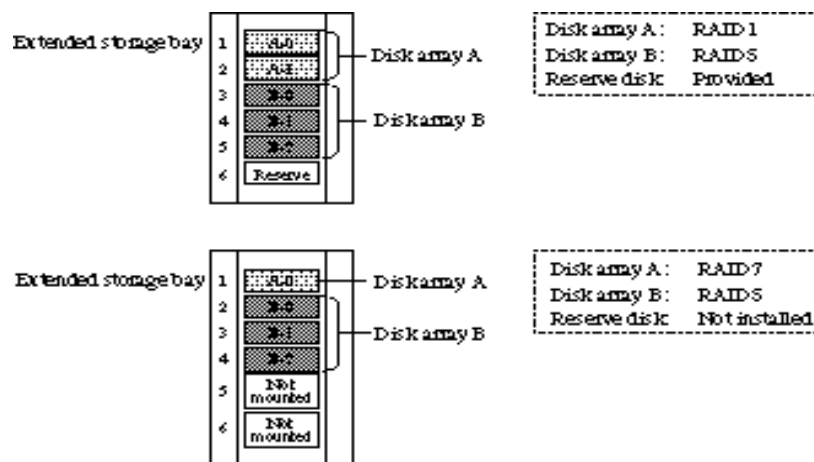
1. Decide the number of disk arrays to be used and the RAID level, then the number of hard disks to be used and whether or not to use a reserve disk.

Hitachi PC VisionBase 8450H/R Server contains six extended storage bays to which you can install a hard disk. You can build a disk array as shown in the following example:

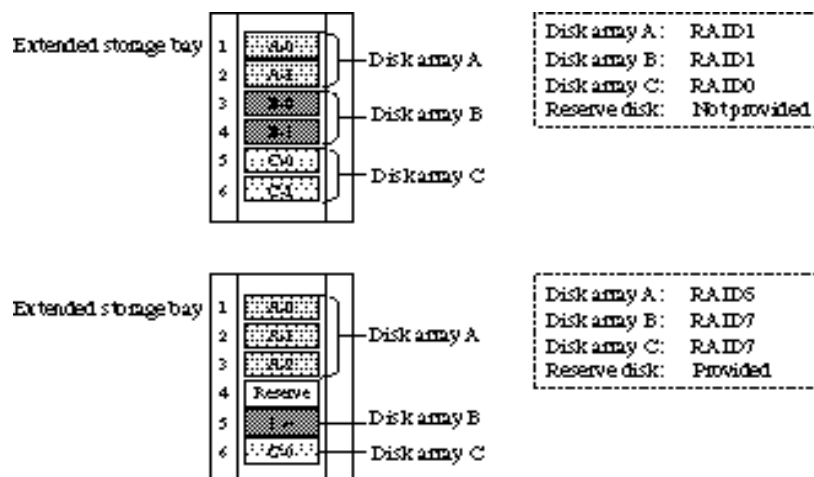
- One-disk-array configuration



- Two-disk-array configuration



- Three-disk-array configuration



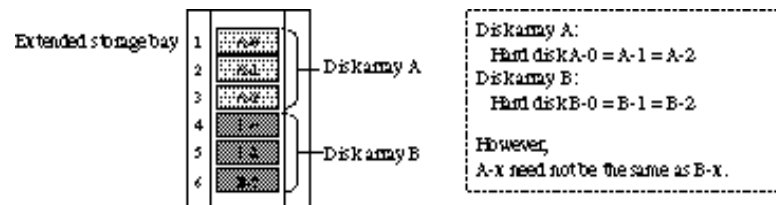
2. Install internal hard disks, disk array controller boards, and internal SCSI cables onto the system equipment.
See "Installing a SCSI Device" on page 62 for details of installation.
3. Make settings for disk arrays using the disk array maintenance utility.
See the attached "Disk Array maintenance Utility Handbook" for details of settings.

Notes on Building Disk Arrays

Hard Disks

The capacity of hard disks used in the same disk array must be the same.

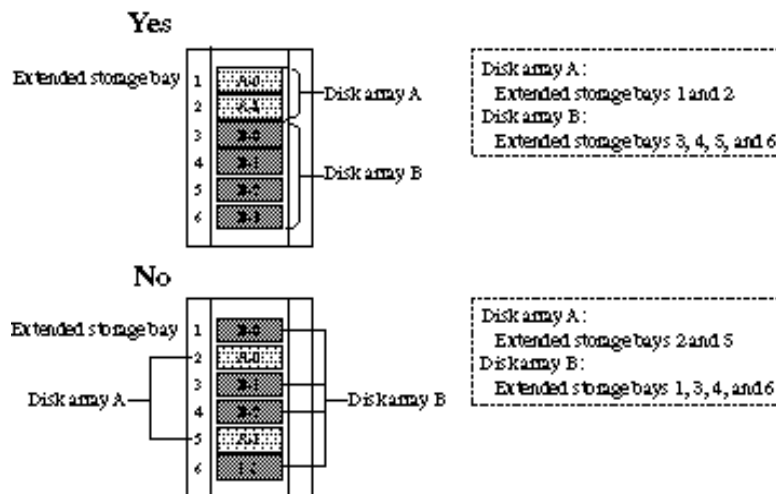
If you build two or more disk arrays for the system equipment, the hard disk capacity for each disk array need not be the same. However, if a reserve disk exists, you need to be aware of some notes on operation. See “Reserve Disk” on page 60 for details.



Installing Location for Hard Disks

It is recommended that you mount hard disks for the same disk array in successive extended storage bays for the purpose of system administration. You are also recommended to record configuration of disk arrays.

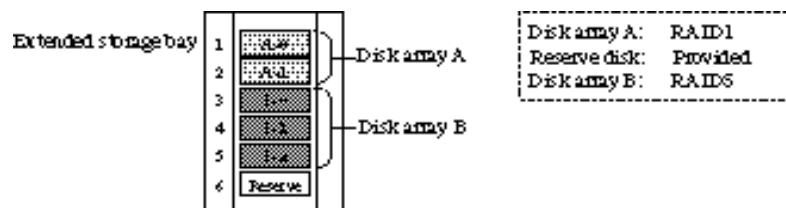
If reserve disks are mounted, the mounting location will differ; it is best to record disk array configuration each time it is changed.



Reserve Disk

The capacity of the reserve disk to be mounted must be the same as that of the hard disks used in the disk array.

If you use two disk arrays, note the following at the time of operation. (The disk array configuration shown below is assumed.)

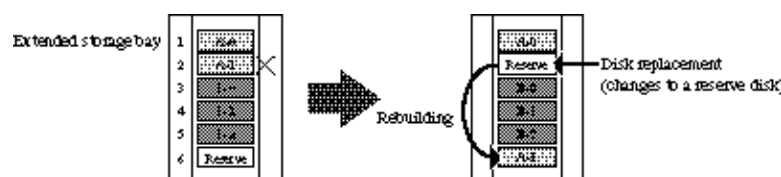


When there are two or more disk arrays at RAID level 1 or 5

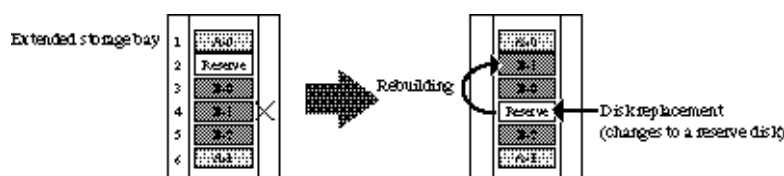
The reserve disk serves as a hot spare for either disk array.

Hot spare for hard disks will change the disk array configuration as follows:

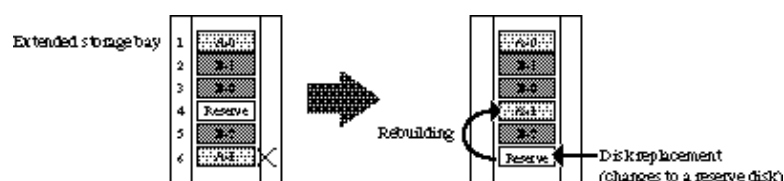
- A failure occurs in hard disk A-1 in disk array A.



- A failure occurs in hard disk B-1 in disk array B.



- A failure occurs in hard disk A in disk array A.



As a result of hot spare, the reserve disk is in the same position as for the original configuration, but data disks A-1 and B-1 in the disk array are switched to each other. As can be seen in this example, hard disks comprising a disk array might switch to any position.

It is recommended therefore that you record the hard disk positions each time a failure occurs.

When the capacity of the hard disks for disk array A differs from that for disk array B

Depending on the capacity of the reserve disk, the hot spare might not function.

Hot spare changes with the capacity of the reserve disk in the following way.

It is assumed that the capacity of disk array A is less than that of disk array B ($A-x < B-x$).

- When the capacity of the reserve disk is the same as that of B-x:

The reserve disk serves as a hot spare in both disk arrays A and B.

For hot spare in disk array A (1 and 3 in “When there are two or more disk arrays at RAID level 1 or 5” on page 60), the capacity of the reserve disk is larger than hard disk A-x used in disk array A, therefore the hard disk after the rebuilding will contain unused (unusable and useless) areas.

- The capacity of the reserve disk is the same as that of A-x:

The reserve disk serves as a hot spare in disk array A but not in disk array B.

Because the capacity of the reserve disk is less than the hard disk B-x, the data cannot be restored onto the disk. For that reason, disk array B remains in degraded mode.

To prevent these, you need to use the same capacity for both disk arrays or provide a reserve disk for each disk array. The priority for reserve disks used when a failure occurs is as follows (1 takes priority over 2):

1. Reserve disk with the same capacity as the failed disk
2. Reserve disk whose SCSI ID is smaller

Installing a SCSI Device

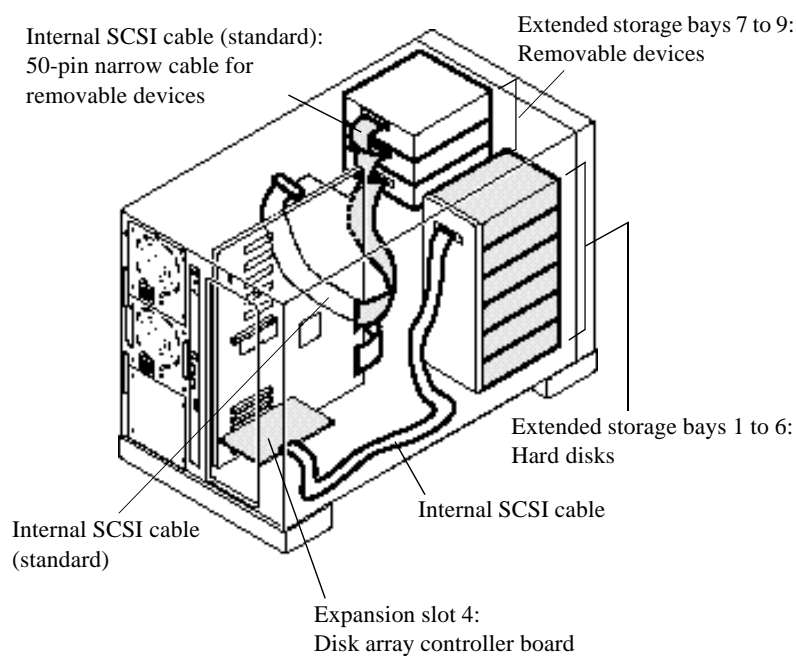
This section explains how to set SCSI IDs and how to install an extended storage bay.

Installing Locations for SCSI Devices

Internal SCSI devices (including internal hard disks and removable devices such as internal CD-ROMs) must be installed onto extended storage bays of the system equipment.

Usable extended storage bays depend on the SCSI device to be installed. Referring to “Extended Storage Bays” on page 38, check the installing positions.

Boards and internal SCSI devices are interconnected in the following way:



Installing an Internal Hard Disk

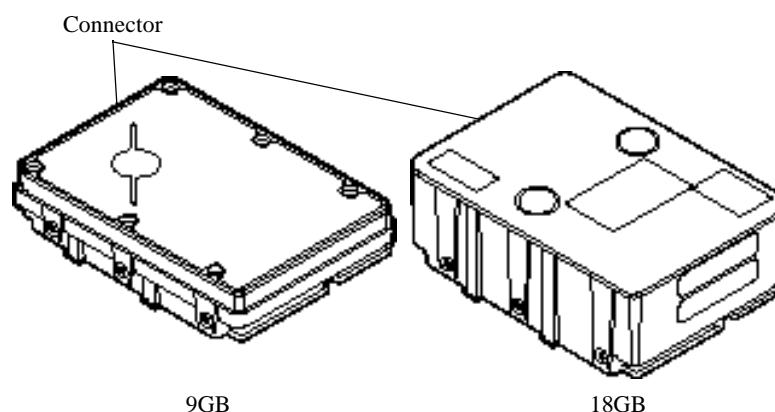
The following example explains how to install internal hard disk 9GB and internal hard disk 18GB onto an extended storage bay.

Extended storage bays 1 to 6 are usable.

Because Hitachi PC VisionBase 8450H/R Server only supports disk array configuration, the starter disk (boot disk) is set by software.

NOTE: For the purpose of system administration, internal hard disks to be set as boot disk (array) must be installed starting in extended storage bay 1.

See the attached “Disk Array Maintenance Utility Handbook” for details.



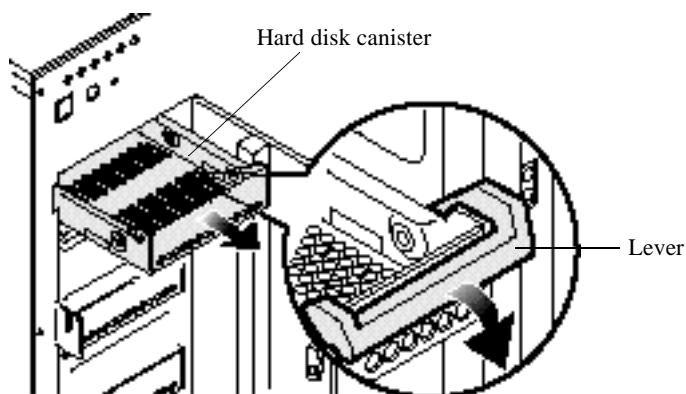
Use extreme care to protect internal hard disks from shock (hitting or falling on hard material). Being precision devices, internal hard disks are very susceptible to shock.

The SCSI ID for an internal hard disk is automatically set according to the extended storage bay onto which it is installed, as shown in the following table:

Extended storage bay	SCSI ID to be set
1	0
2	1
3	2
4	3
5	4
6	5

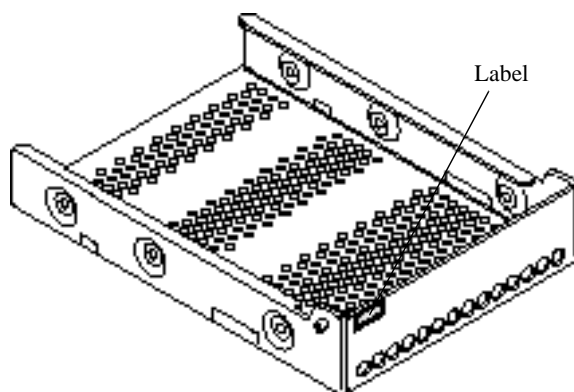
NOTE: You need not set a terminating resistor for internal hard disks; a terminating resistor is mounted on the platter board to be connected.

1. Open the storage bay door. See “Opening the Storage Bay Door” on page 41.
2. Take out the hard disk canister from the extended storage bay onto which you want to install the internal hard disk. When taking out the canister, pull the lever to the front, unlock, and then extract the canister.

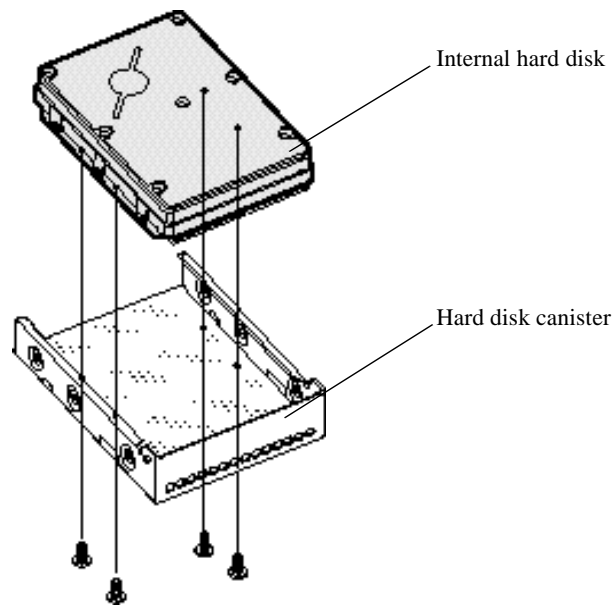


The hard disk canister has a label corresponding to the extended storage bay. The following table shows the correspondence between extended storage bays and labels:

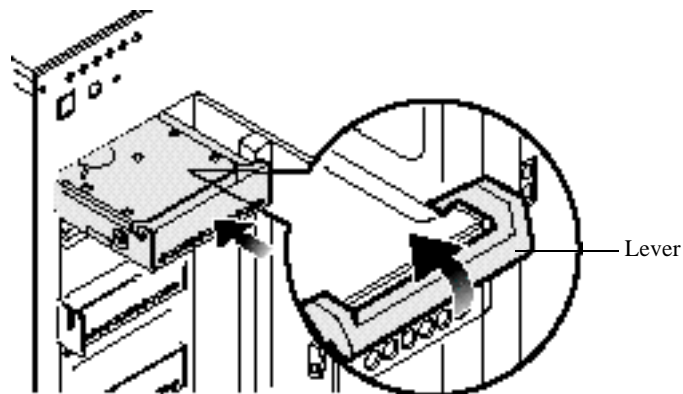
Extended storage bay	Label
1	A1
2	A2
3	A3
4	A4
5	A5
6	A6



3. Fix the internal hard disk on the hard disk canister with mounting screws (attached to the internal hard disk).



4. Insert the hard disk canister into the extended storage bay by aligning the canister with the guide. When you cannot insert the canister any more, lift the lever for locking.



5. Stick labels on the configuration table on the back of the storage bay door.

Stick hard disk type labels (attached to each internal hard disk) in the corresponding positions on the extended storage bay onto which you installed the hard disks.

NOTE: See the attached “Disk Array Maintenance Utility Handbook” for disk array settings.

Example of configuration table:

9GB hard disk x 2 (extended storage bays 1 and 2)

18GB hard disk x 4 (extended storage bays 3 to 6)

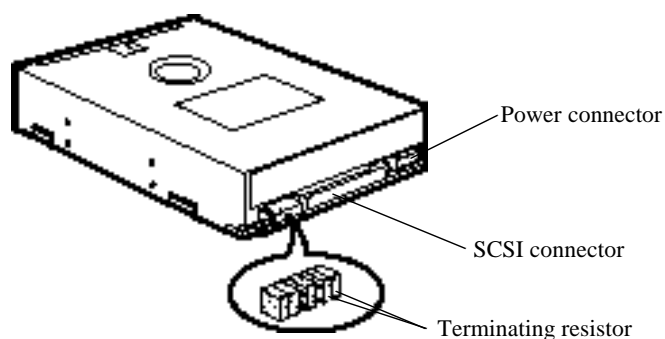
No.	Position of type label
1	PC-UH7094
2	PC-UH7094
3	PC-UH7184
4	PC-UH7184
5	PC-UH7184
6	PC-UH7184

6. Close the storage bay door.

The next step is connecting cables. See “Connecting Cables” on page 78.

Installing Internal CD-ROM (Standard)

This section explains how to install an internal CD-ROM onto extended storage bays. Extended storage bays 7 and 8 are usable.



1. Set a SCSI ID for the internal CD-ROM.

Use the short bar to set the SCSI ID into the range of 0 to 6. Use a pair of tweezers for inserting and removing the short bar.

The following table shows the correspondence between the SCSI IDs and the settings on the short bar. The short bar is factory-set at 3.



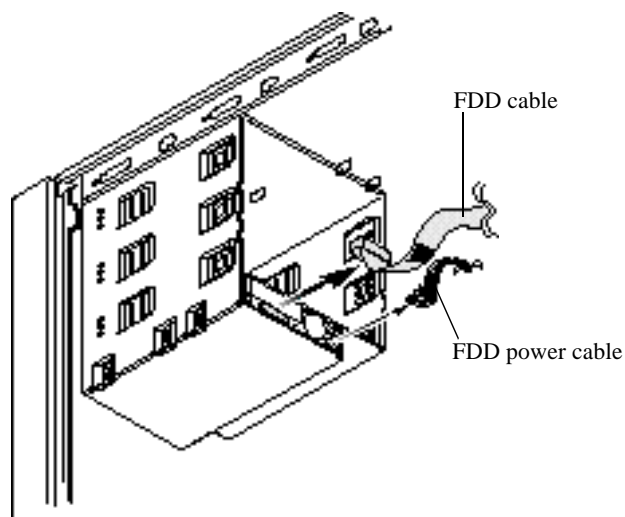
Remove short bars between pins 11 and 12 and between pins 13 and 14. You need not set a terminating resistor in internal CD-ROMs because a terminating resistor has already been installed in the internal SCSI cable (for removable devices).

Be sure to set SCSI IDs so that there is no duplication within the group of SCSI devices connected with the same internal SCSI cable.

Store the removed short bars properly.

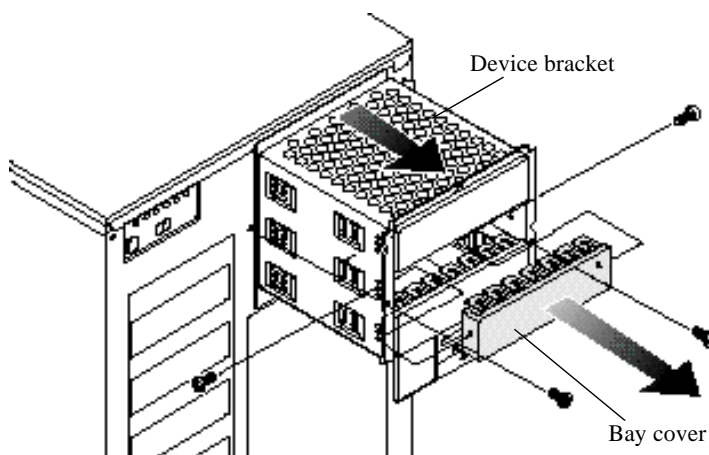
SCSI ID	Setting on the short bar
0	
1	
2	
3	
4	
5	
6	

2. Remove the FDD cable and FDD power cable from the back of the floppy disk (standard).



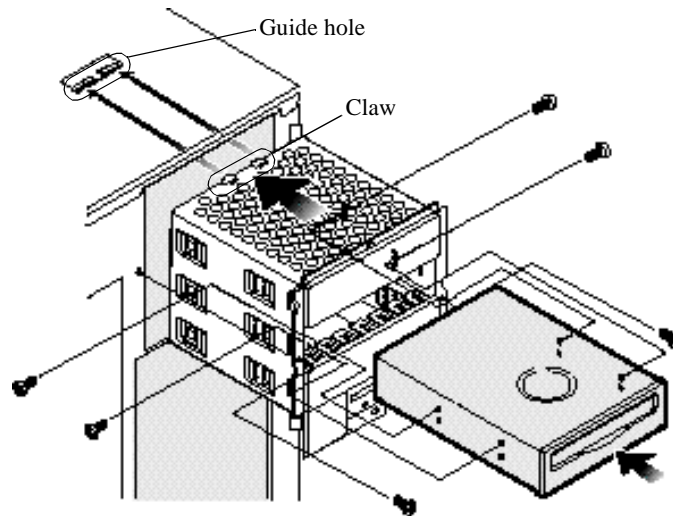
3. Remove two mounting screws from the front of the system equipment, then extract the device bracket.
4. Remove two mounting screws from the extended storage bay to be used, then remove the bay cover.

NOTE: Store the removed bay cover properly.



5. Fix the internal CD-ROM onto the device bracket with four mounting screws (attached to each internal CD-ROM).

6. Install the device bracket onto the system equipment, then fix it with two mounting screws. While installing, insert the claw of the device bracket into the guide hole on the system equipment.

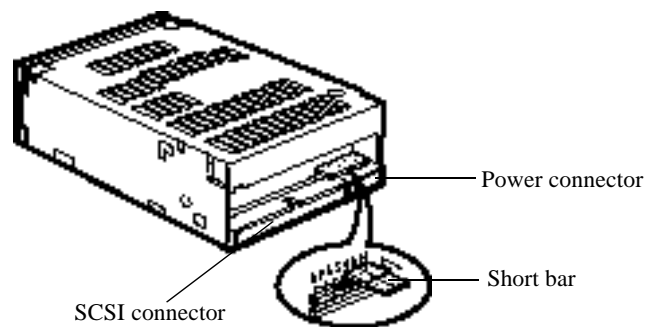


Use extreme care to protect internal hard disks from shock (hitting or falling on hard material). Being precision devices, internal hard disks are very susceptible to shock.

The next step is connecting cables. See “Connecting Cables” on page 78.

Installing Internal DAT (Optional)

This section explains how to install an internal DAT onto an extended storage bay. Extended storage bays 8 and 9 are usable.



1. Set a SCSI ID for the internal DAT.

Use the short bar to set the SCSI ID into the range of 0 to 6. Use a pair of tweezers for inserting and removing the short bar. The following table shows the correspondence between the SCSI IDs and the settings on the short bar. The short bar is factory-set at 3.



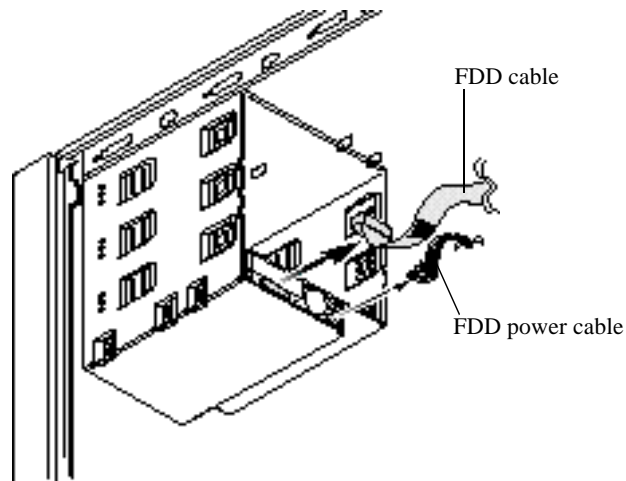
Be sure to set SCSI IDs so that there is no duplication within the group of SCSI devices connected with the same internal SCSI cable.

NOTE: You can use internal DATs without setting a terminating resistor, because a terminating resistor has already been installed in the internal SCSI cable (for removable devices).

Store the removed short bars properly.

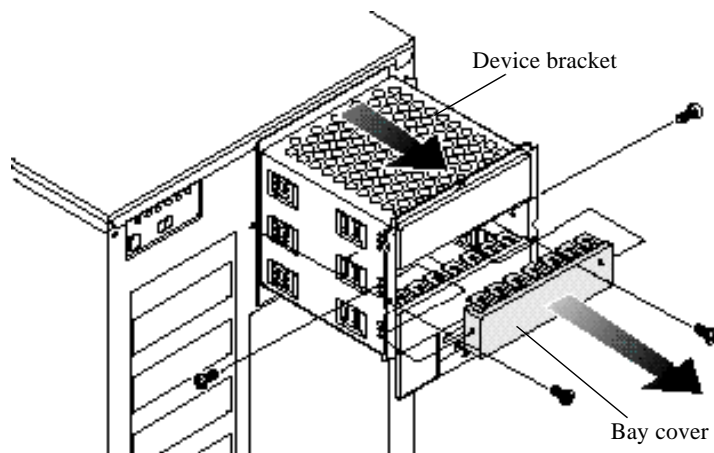
SCSI ID	Setting on the short bar
0	 8 7 6 5 4 3 2 1
1	 8 7 6 5 4 3 2 1
2	 8 7 6 5 4 3 2 1
3	 8 7 6 5 4 3 2 1
4	 8 7 6 5 4 3 2 1
5	 8 7 6 5 4 3 2 1
6	 8 7 6 5 4 3 2 1

2. Remove the FDD cable and FDD power cable from the back of the floppy disk (standard).

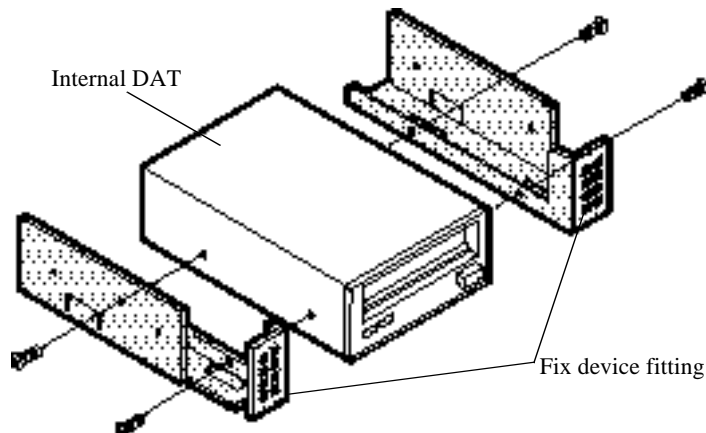


3. Remove two mounting screws from the front of the system equipment, then extract the device bracket.
4. Remove two mounting screws from the extended storage bay to be used, then remove the bay cover.

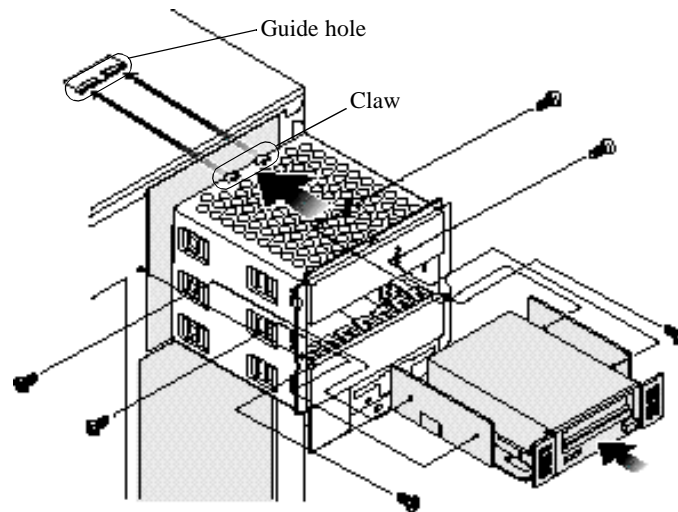
NOTE: Store the removed bay cover properly.



5. Fix device fittings onto the internal DAT with four mounting screws (attached to each internal DAT).



6. Fix the internal DAT onto the device bracket with four mounting screws (attached to each internal DAT).
7. Install the device bracket onto the system equipment, then fix it with two mounting screws. While installing, insert the claw of the device bracket into the guide hole on the system equipment.

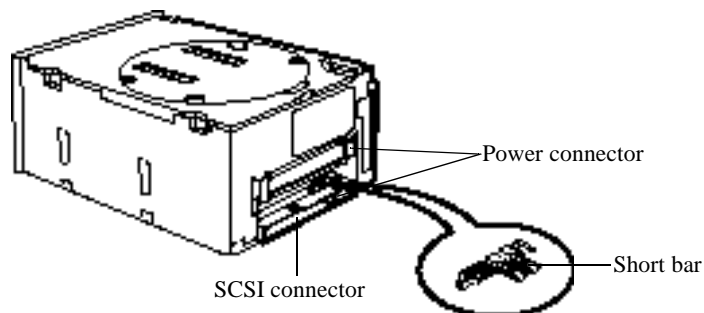


Use extreme care to protect internal hard disks from shock (hitting or falling on hard material). Being precision devices, internal hard disks are very susceptible to shock.

The next step is connecting cables. See “Connecting Cables” on page 78.

Installing an Internal DAT Changer (Optional)

This section explains how to install an internal DAT changer onto extended storage bays. The height of the internal DAT changer is approximately twice the height of one extended storage bay, so use extended storage bays 8 and 9.



1. Set a SCSI ID for the internal DAT changer.

Use the short bar to set the SCSI ID into the range of 0 to 6. Use a pair of tweezers for inserting and removing the short bar.

The following table shows the correspondence between the SCSI IDs and the settings on the short bar. The short bar is factory-set at 3.



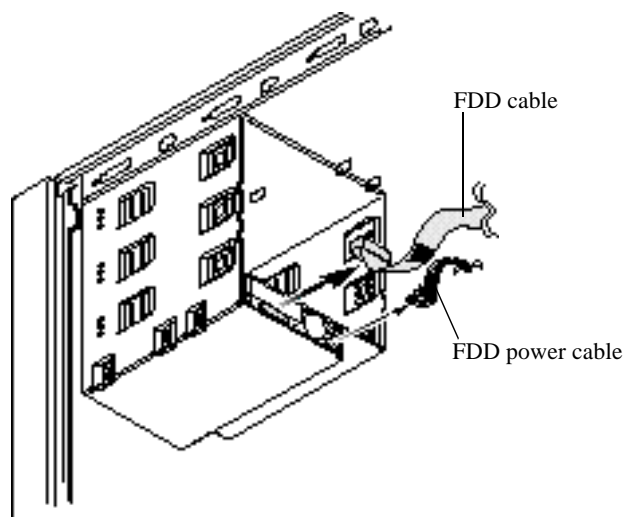
Be sure to set SCSI IDs so that there is no duplication within the group of SCSI devices connected with the same internal SCSI cable.

NOTE: You can use the internal DAT changer without setting a terminating resistor, because a terminating resistor has already been installed in the internal SCSI cable (for removable devices).

Store the removed short bars properly.

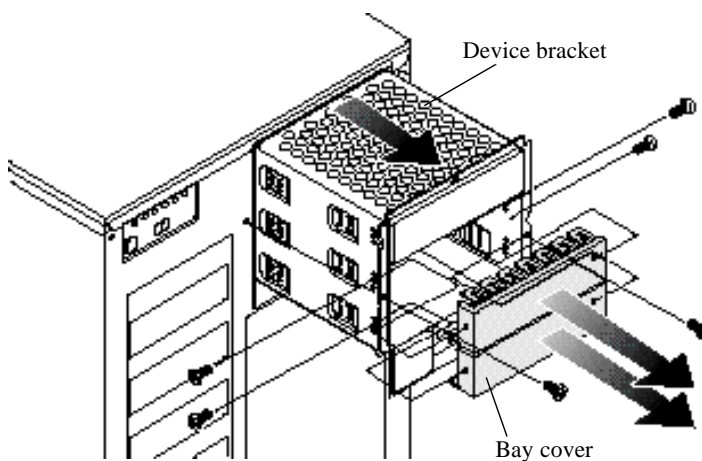
SCSI ID	Setting on the short bar
0	 8 7 6 5 4 3 2 1
1	 8 7 6 5 4 3 2 1
2	 8 7 6 5 4 3 2 1
3	 8 7 6 5 4 3 2 1
4	 8 7 6 5 4 3 2 1
5	 8 7 6 5 4 3 2 1
6	 8 7 6 5 4 3 2 1

2. Remove the FDD cable and FDD power cable from the back of the floppy disk (standard).



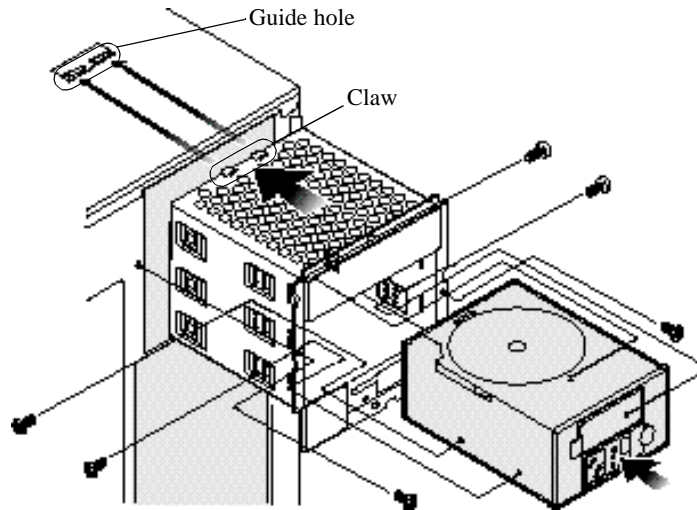
3. Remove two mounting screws from the front of the system equipment, then extract the device bracket.
4. Remove two mounting screws from the extended storage bay to be used, then remove the bay cover.

NOTE: Store the removed bay cover properly.



5. Fix the internal DAT changer onto the device bracket with four mounting screws (attached to the internal DAT changer).

6. Install the device bracket onto the system equipment, then fix it with two mounting screws. While installing, insert the claw of the device bracket into the guide hole on the system equipment.



Use extreme care to protect internal hard disks from shock (hitting or falling on hard material). Being precision devices, internal hard disks are very susceptible to shock.

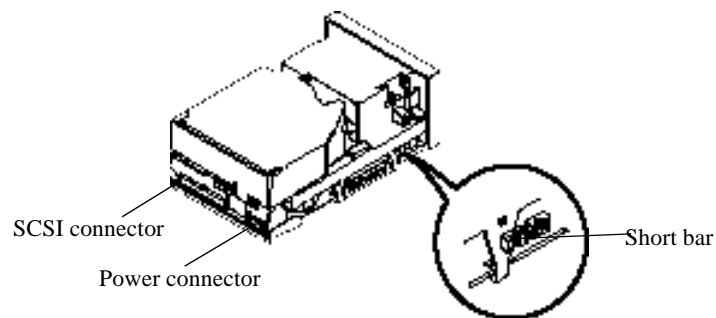
The next step is connecting cables. See “Connecting Cables” on page 78.

Installing an Internal DLT (Optional)

This section explains how to install an internal DLT onto extended storage bays. The height of the internal DLT is approximately twice the height of one extended storage bay, so use extended storage bays 8 and 9.

NOTE: This section explains internal DLT. The same applies to internal DLT.

In internal DLT, a wide 68-pin type is used.



1. Set a SCSI ID for the internal DLT.

Use the short bar to set the SCSI ID into the range of 0 to 6. Use a pair of tweezers for inserting and removing the short bar.

The following table shows the correspondence between the SCSI IDs and the settings on the short bar. The short bar is factory-set at 3.



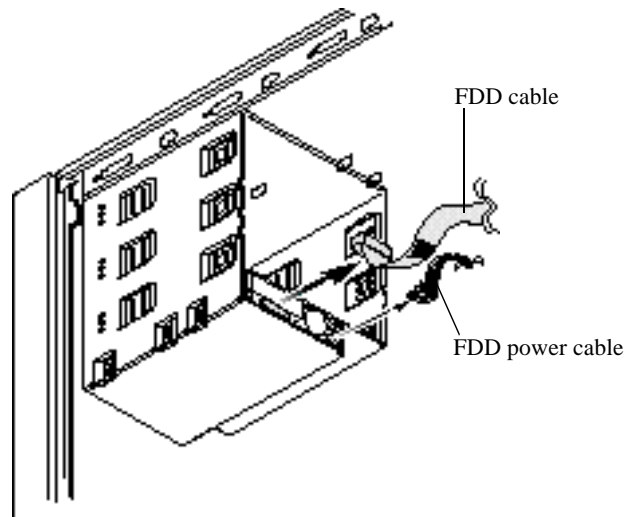
Be sure to set SCSI IDs so that there is no duplication within the group of SCSI devices connected with the same internal SCSI cable.

NOTE: You can use the internal DAT changer without setting a terminating resistor, because a terminating resistor has already been installed in the internal SCSI cable (for removable devices).

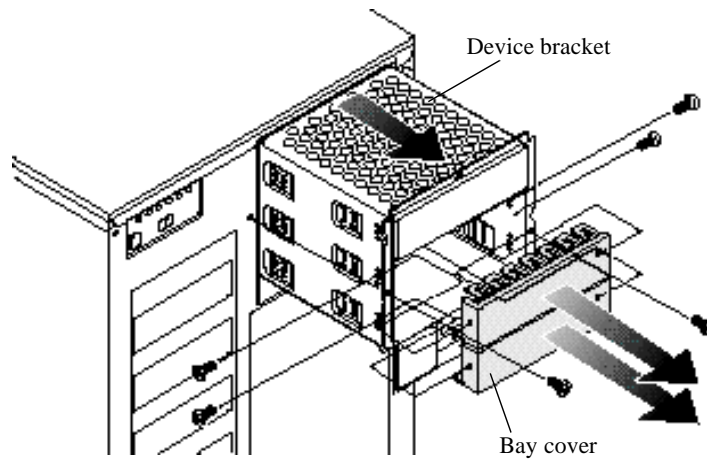
Store the removed short bars properly.

SCSI ID	Setting on the short bar
0	
1	
2	
3	
4	
5	
6	

2. Remove the FDD cable and FDD power cable from the back of the floppy disk (standard).

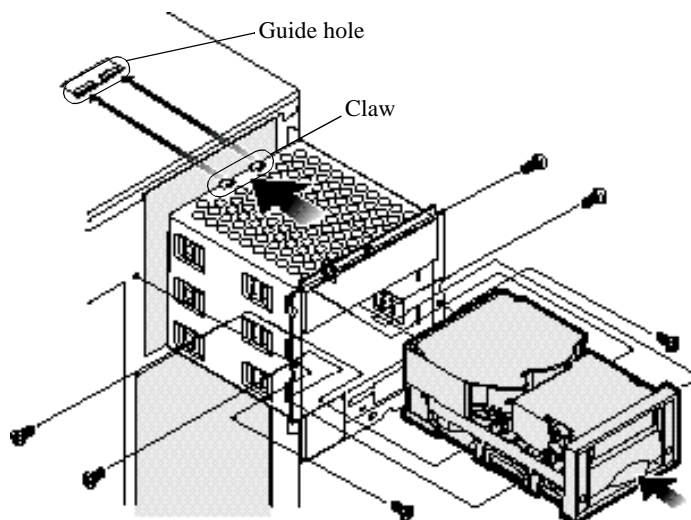


3. Remove two mounting screws from the front of the system equipment, then extract the device bracket.
4. Remove two mounting screws from the extended storage bay to be used, then remove the bay cover.



5. Fix the internal DLT onto the device bracket with four mounting screws (attached to the internal DLT).

6. Install the device bracket onto the system equipment, then fix it with two mounting screws. While installing, insert the claw of the device bracket into the guide hole on the system equipment.



Use extreme care to protect internal hard disks from shock (hitting or falling on hard material). Being precision devices, internal hard disks are very susceptible to shock.

The next step is connecting cables. See “Connecting Cables” on page 78.

Connecting Cables

Connect power cables and internal SCSI cables with SCSI devices. See “Installing Locations for SCSI Devices” on page 62 for how internal SCSI cables should be interconnected.



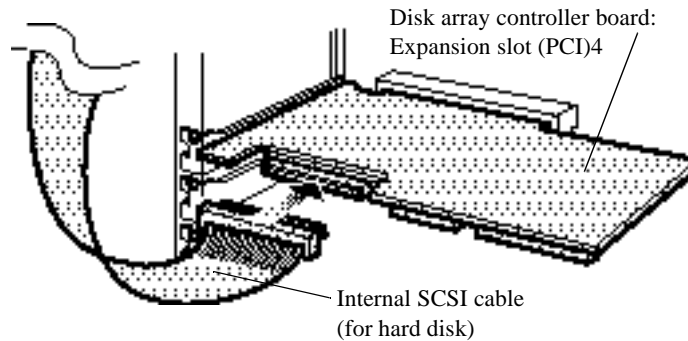
Avoid bending connector pins when connecting cables.

1. Connect internal SCSI cables (for hard disk) onto the disk array controller board.

NOTE: See "Installing PCI Boards" on page 90 for installing a disk array controller board.

Internal SCSI cables (for hard disk) are connected onto the hard disk platter board behind extended storage bays 1 to 6.

An internal SCSI cable (for removable device) has already been connected to the master board.

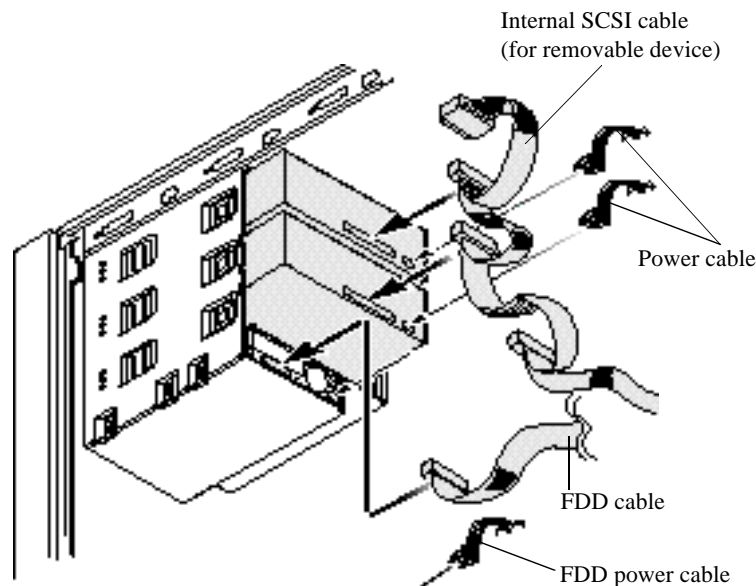


2. Connect internal SCSI cables (for removable device) and power cables with SCSI devices on extended storage bays 7 to 9. Also, connect an FDD cable and FDD power cable with the floppy disk drive.

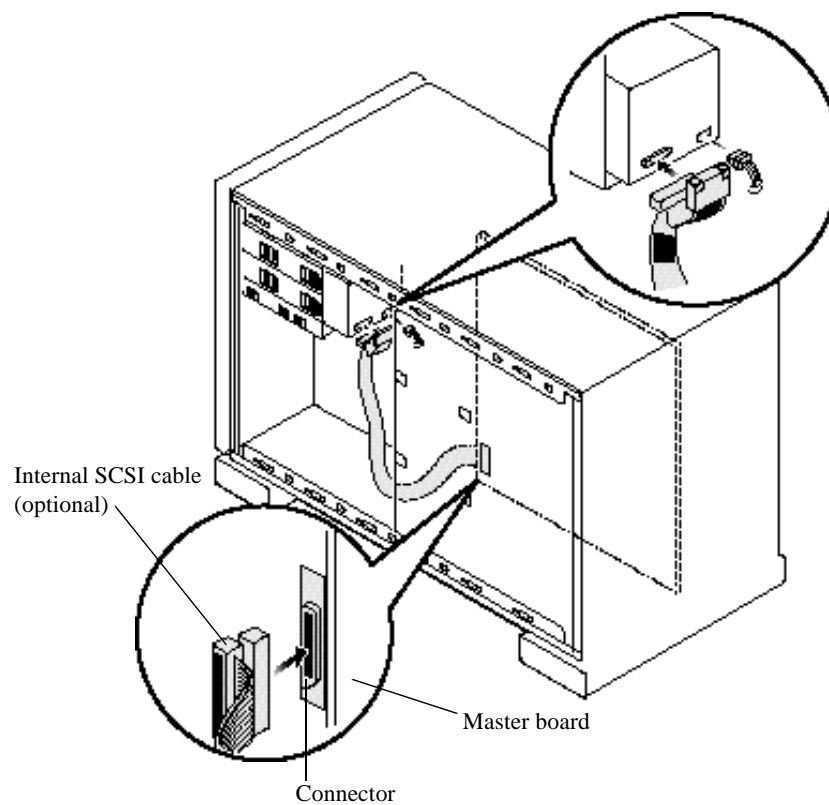
NOTE: An internal SCSI cable (for removable device) has already been connected to the master board.

Use the power cables provided in the lower portion of the system equipment. Unclamp and remove the cables from there, then connect them to the SCSI device.

An internal DAT changer requires two power cables. (It does not operate if only one power cable is connected.)



3. If you install an internal DLT, use the internal SCSI cable to connect the master board with the internal DLT.



This completes the installation of SCSI devices.

Installing Various Boards

This section explains how to install various types of boards.



Before changing the configuration of the system equipment (such as internal SCSI devices or extended boards), be sure to unplug the power cord, and wait at least 30 seconds. In some rare cases, the setup data might be changed. If so, turn off the system equipment, turn it on, then change the settings on the Setup Menu.

Installing Processors

This system allows multiprocessing of up to four processors. If you use an OS intended for multiprocessing, you can speed up the system by adding processors.

Processors

Processors are of two types, those with 512kB secondary cache and those with 1MB secondary cache. Choose an appropriate type, then install processors starting in processor slot 1.

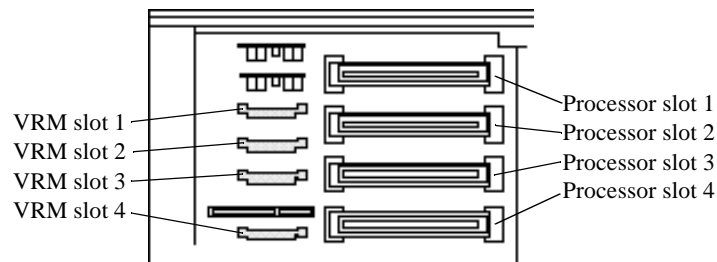
When you install processors, you also need to install voltage regulating module (VRM; attached to each processor) starting in VRM slot 1.

You need to install a terminator for processor in processor slots with no processor installed.



If you install more than one processor, unify the secondary cache capacity.

Make sure you install processors, VRMs, and terminators for processors in the specified positions, to prevent the system equipment from malfunction.



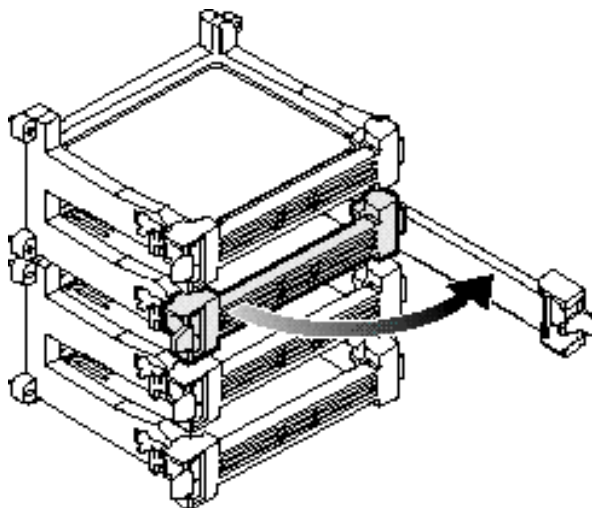
Installing Processors

This section explains how to install processors in processor slot 2.

NOTE: This section assumes that a processor has already been installed in processor slot 1. Install processors in processor slots 3 and 4 in the same way.

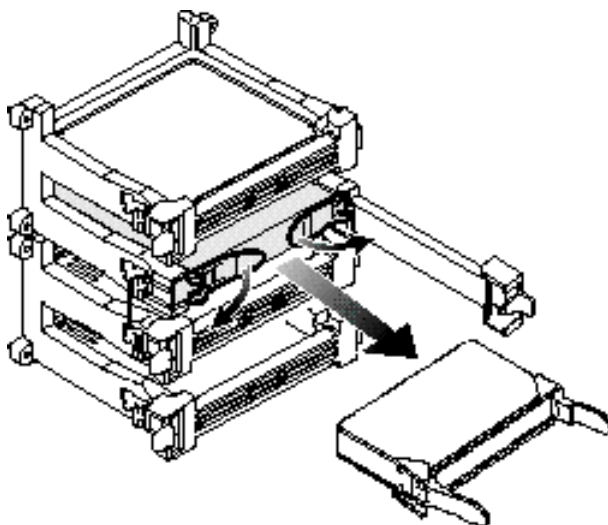
Install terminators for processor in the same way as for processors.

1. Disengage the claw of the cover for processor slot 2, then open the processor slot.



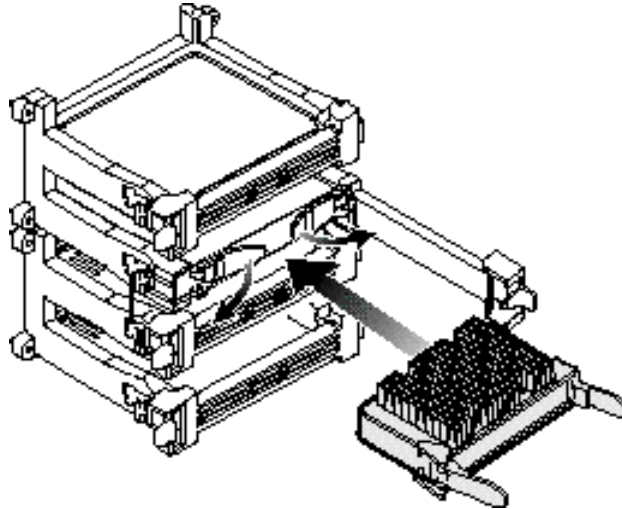
2. Remove the terminator for processor from processor slot 2.

Opening the two levers at the same time will release the terminator from the connector. Then hold and extract the terminator.



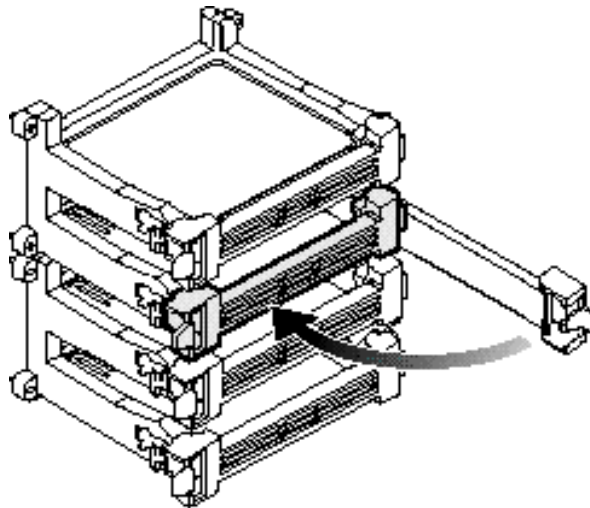
3. Holding the processor with its fin facing upward, and keeping the levers open, insert the processor into the slot until it stops, then close the levers simultaneously.

NOTE: When you install a terminator for processor, you also need to install levers. See “Installing a Lever onto the Terminator for Processor” on page 85 for details.

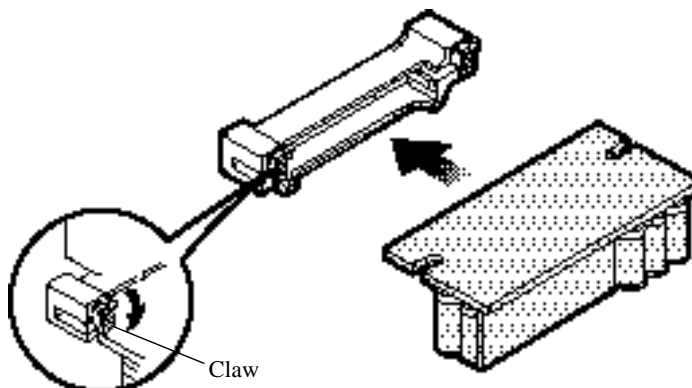


4. Close the cover.

NOTE: If the claw of the cover cannot be inserted properly, the processor is probably inserted halfway. Check whether the levers are closed properly.



5. Install the VRM (attached to the processor) in VRM slot 2.
Push in the VRM until the claws of the VRM slot are engaged.

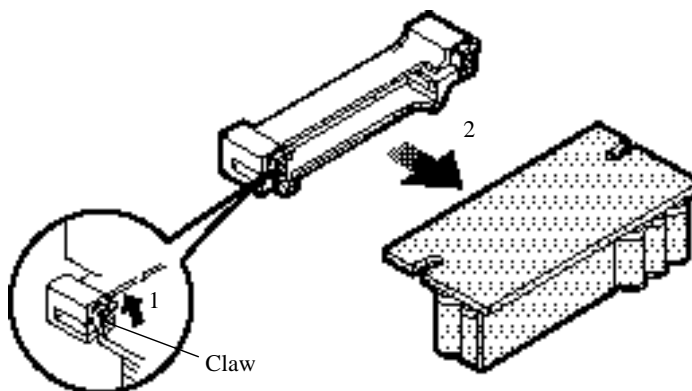


Removing Processors

Remove processors in the reverse procedure to their installation; however, remove a VRM in the following way:

Removing a VRM

Raise the claws on both ends of the VRM slot, then remove the VRM.



Installing a Lever onto the Terminator for Processor

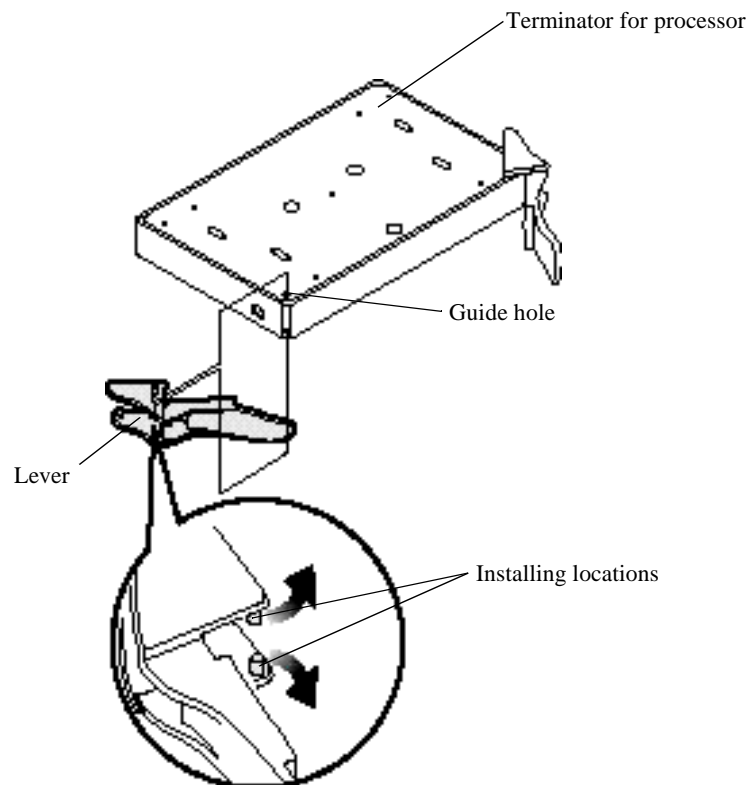
If you want to install a terminator for processor into the processor slot, you need to install the lever (attached to the system equipment) onto the terminator in advance.

Paying attention to the direction of the lever and the installing locations, and stretching out the lever, insert it into the guide hole.



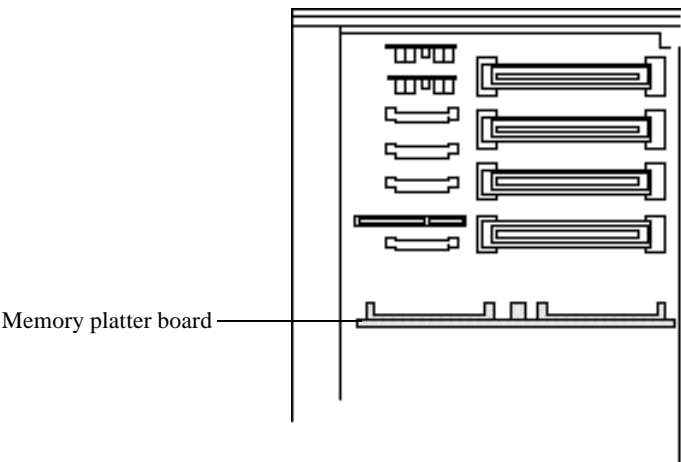
Use sufficient care to prevent lever installing locations from bending.

NOTE: When installing, make sure that the terminator for processor shown on the right comes in an upper position.



Installing Memory DIMMs

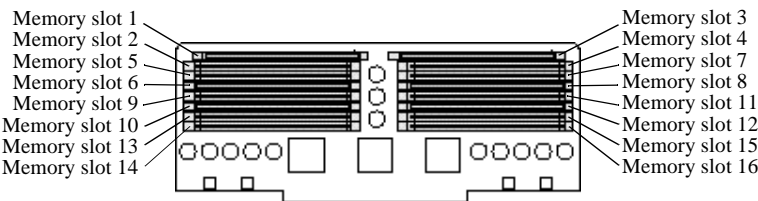
Install memory DIMMs in memory slots of the memory platter board installed in the system equipment.



Memory Platter Board

The memory platter board has 16 memory slots. The memory slot numbers and the order of installation are as follows:

[Memory platter board]



[Order of installing memories]

Number of memories installed	Memory slots			
	1-4	5-8	9-12	13-16
1 (4 x 1)				
2 (4 x 2)				
3 (4 x 3)				
4 (4 x 4)				

Memory DIMMs should be installed starting from the least memory slot number.

Memory

There is one type of memory DIMM (128MB, 168-pin).

NOTE: You can check the total capacity of memory installable on the system equipment from the final memory check values displayed by initial diagnosis at system startup.

Memory Capacity	Memory Slot			
	1–4	5–8	9–12	13–16
512MB (standard)	Install	—	—	—
1.0GB	Install	Install	—	—
1.5GB	Install	Install	Install	—
2.0GB	Install	Install	Install	Install

Installing a Memory DIMM

Memory DIMMs must be added in units of four.

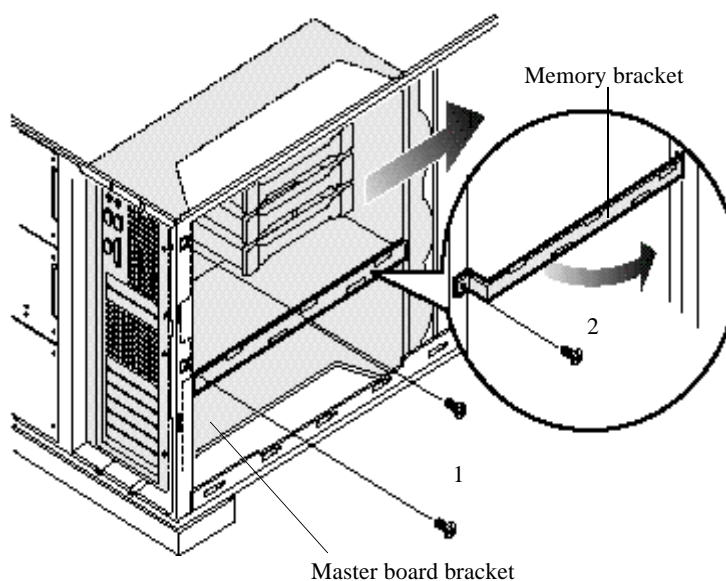


Memory DIMMs contains some parts that are susceptible to static electricity. Before handling memory DIMMs, let static electricity be released from your body, for example, by touching a metallic door knob.

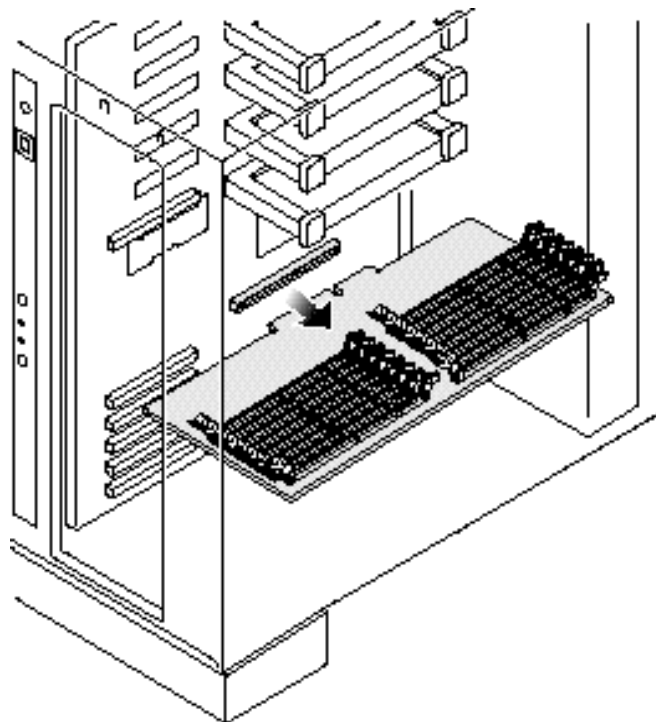
Make sure that all of memory slots 1 to 4 have a memory DIMM installed.

Make sure that there is no shift at the time of insertion. Any shift would cause some damage such as the bending of pins.

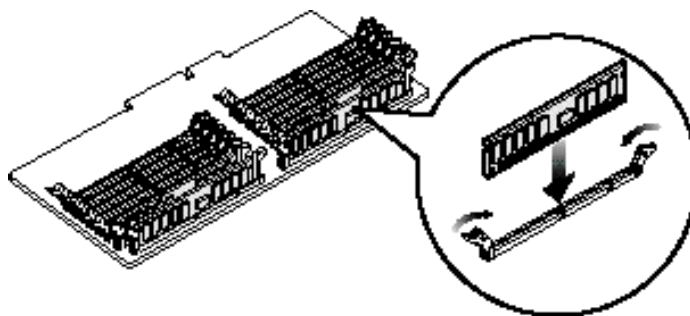
1. Remove the two mounting screws from the brace at the back of the system equipment, then pull the master board bracket to the front until it stops.
2. Remove the two mounting screws from the memory bracket, then pull and extract the memory bracket.



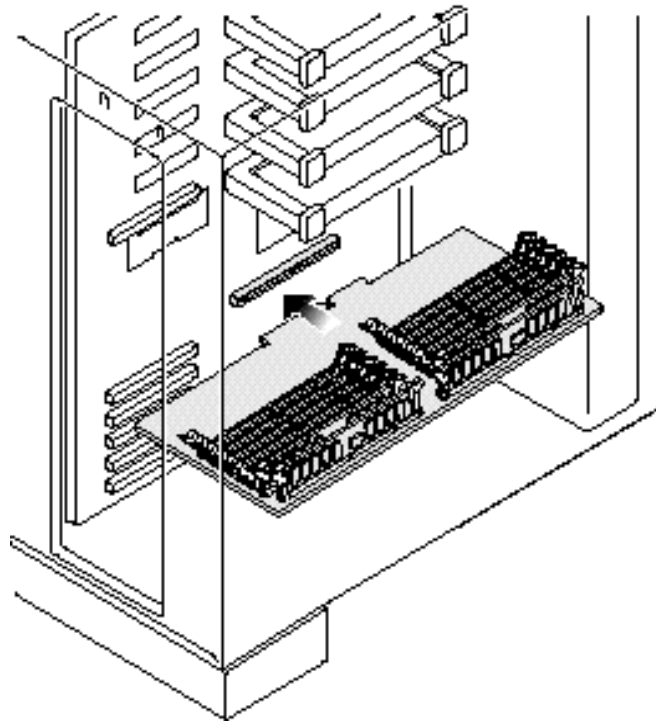
3. Holding both ends of the memory platter board, extract the board straight horizontally.



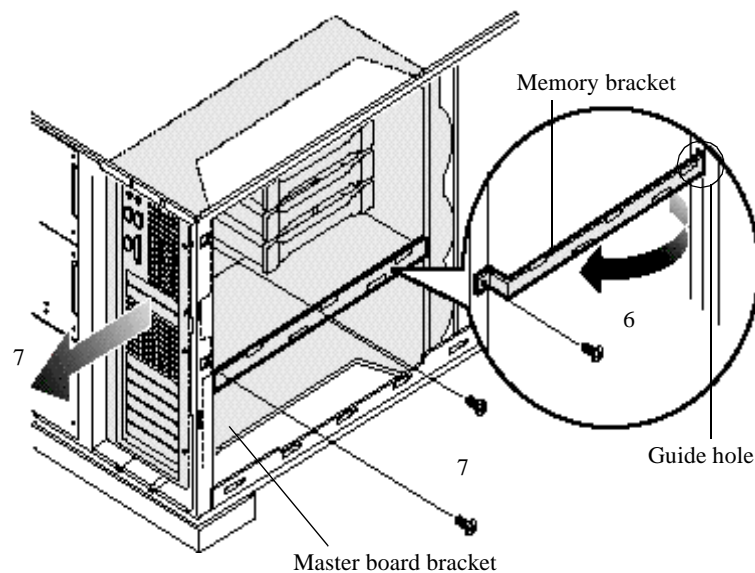
4. Keeping open the locks on the right and left of the memory slot, insert the memory DIMM. Proper installation of the memory DIMM will close the locks.



5. Aligning the memory platter board with the guide, insert the board straight horizontally.



6. After inserting the claw of the memory bracket into the guide hole on the system equipment, fix it with mounting screws.
7. Pull the master bracket to the back, then fix it with two mounting screws.

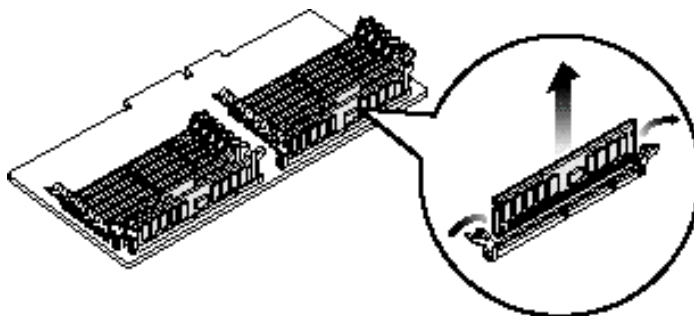


Removing Memory DIMMs

Remove memory DIMMs in the reverse procedure to their installation; however, remove a memory DIMM from a memory slot in the following way:

Removing a memory DIMM

Pushing away the locks at the right and left of the memory slot to have the memory DIMM released from the connector, then extract it straight to the front.



Installing Extended Boards

This section explains how to install extended boards.

Usable expansion slots depend on the extended board to be installed. Referring to “Expansion Slots” on page 37, check the installing positions.



Extended boards contains some parts that are susceptible to static electricity. Before handling extended boards, let static electricity be released from your body, for example, by touching a metallic door knob.

Avoid inserting boards sideways or inserting them with both ends shifted, otherwise the boards might be damaged.

Refer to the descriptions concerning installation, if any, on the manual attached to the extended board.

If you install extended boards in places other than the specified expansion slots or if you install unsupported extended boards, operation cannot be guaranteed.

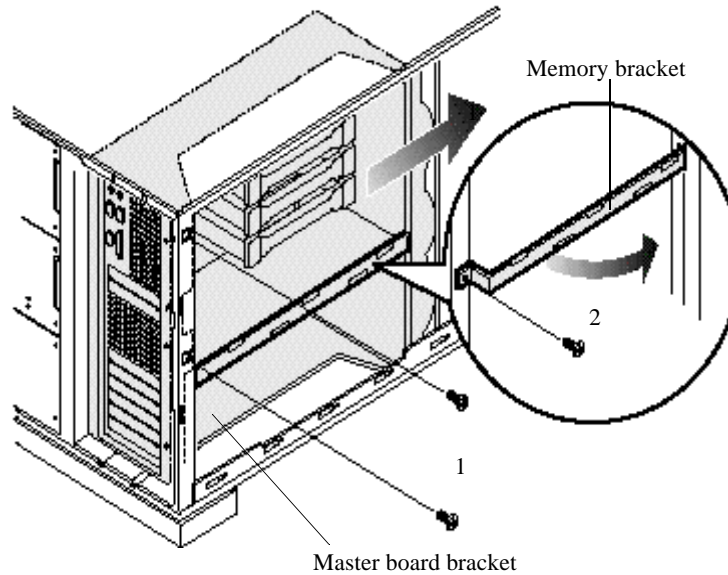
Installing PCI Boards

Extended boards conforming to the PCI specification are as follows:

- Disk array controller board (standard)
- Fibre Channel board (optional)
- LAN board (optional)
- Multi-communication box (optional)
- ISDN board (optional)
- SVP board (optional)

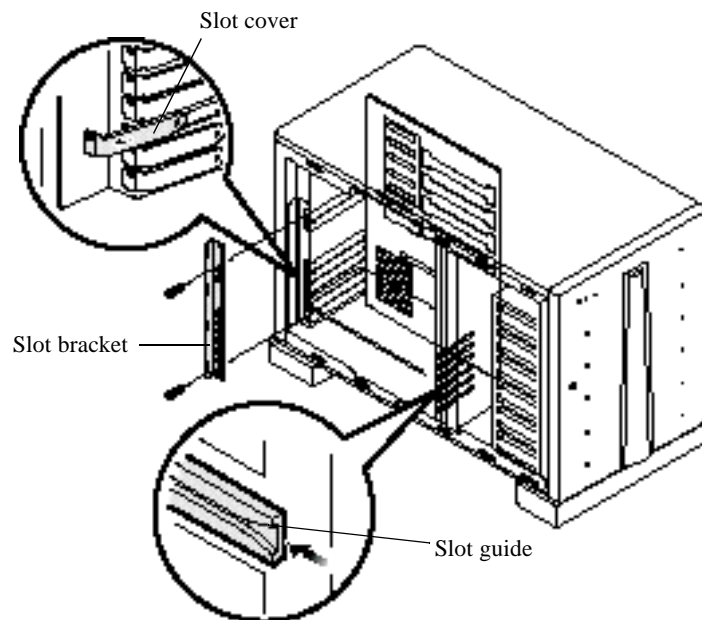
Installing PCI boards

1. Remove two mounting screws from the brace at the back of the system equipment, then pull the master board bracket to the front until it stops.
2. Remove the mounting screws from the memory bracket, then extract the bracket by pulling it to the front.



3. Remove two mounting screws, then remove the slot bracket and slot cover.

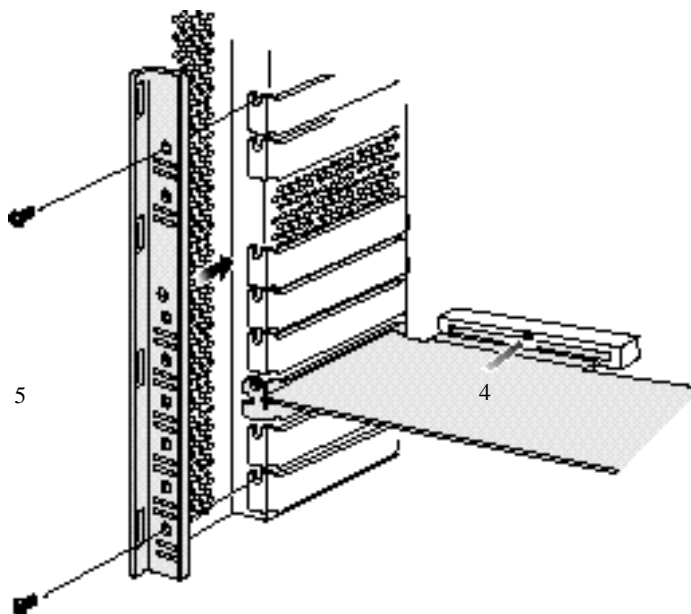
NOTE: Store the removed slot covers properly.



4. Aligning the connector side with the slot and the left end of the board with the slot guide, and holding both ends of the board, push in the board.

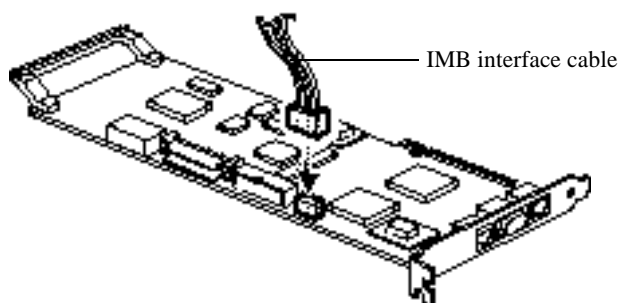
NOTE: You need not align a short size board with the slot guide.

5. Fix the slot bracket with two mounting screws. Mounting screws must be installed in expansion slot (PCI) 1 and expansion slot (ISA) 1.



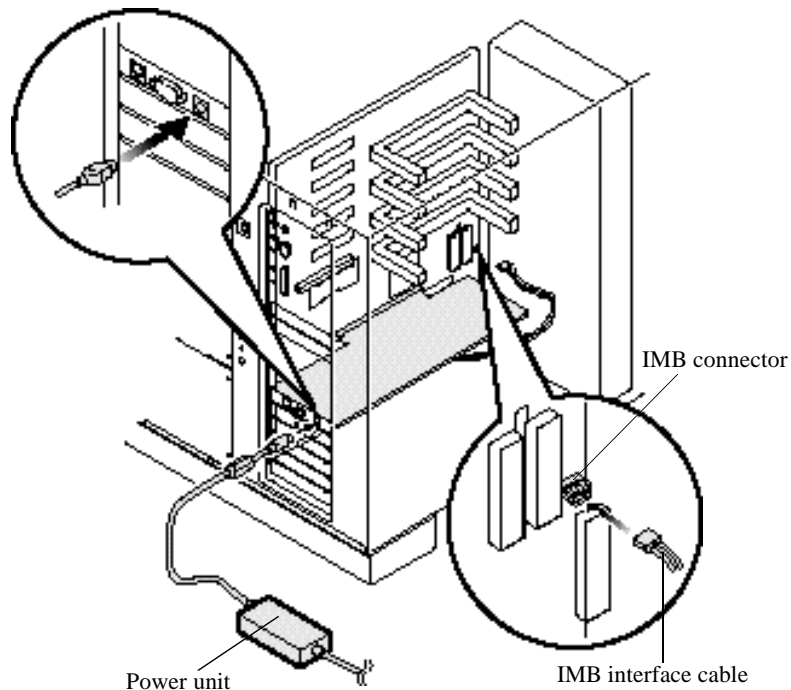
SVP board (Optional)

Connect the IMB interface cable (attached to the SVP board) with the board in advance.

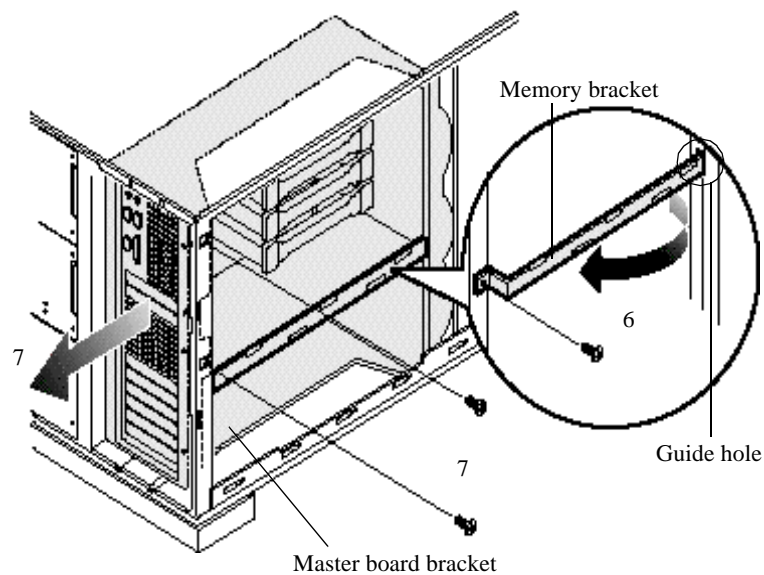


After installing the board, connect the IMB interface cable with the system equipment. Also connect the power unit (attached to the SVP board) with the board.

NOTE: Before connecting the IMB interface cable, remove the memory platter board.



6. Insert the claw of the memory bracket into the guide holes on the system equipment, then fix it with mounting screws.
7. Pull the master board bracket to the back, then fix it with two mounting screws.



Removing extended boards

Remove extended boards in the reverse procedure to their installation.

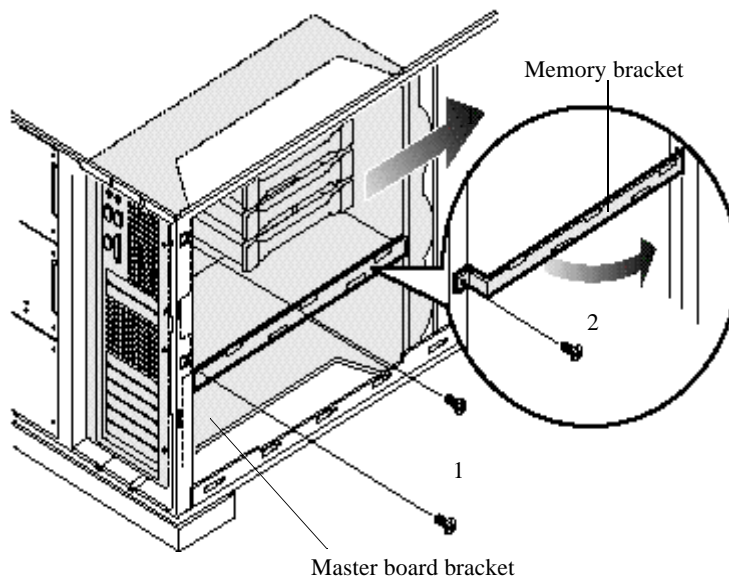
Installing ISA Boards

Extended boards conforming to the ISA specification are as follows:

- Communication board (optional)
- ISDN board set (optional)

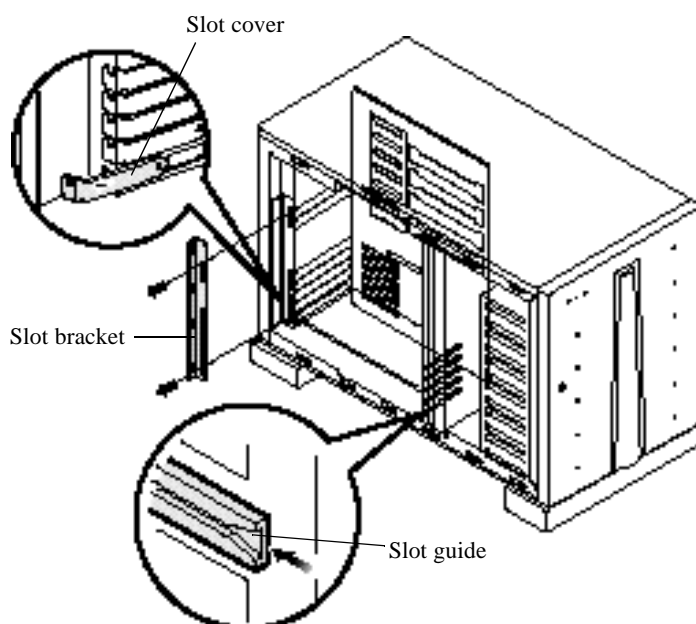
Installing ISA boards

1. Remove two mounting screws from the brace at the back of the system equipment, then pull the master board bracket to the front until it stops.
2. Remove the mounting screws from the memory bracket, then extract the bracket by pulling it to the front.



3. Remove the mounting screws, then the slot cover.

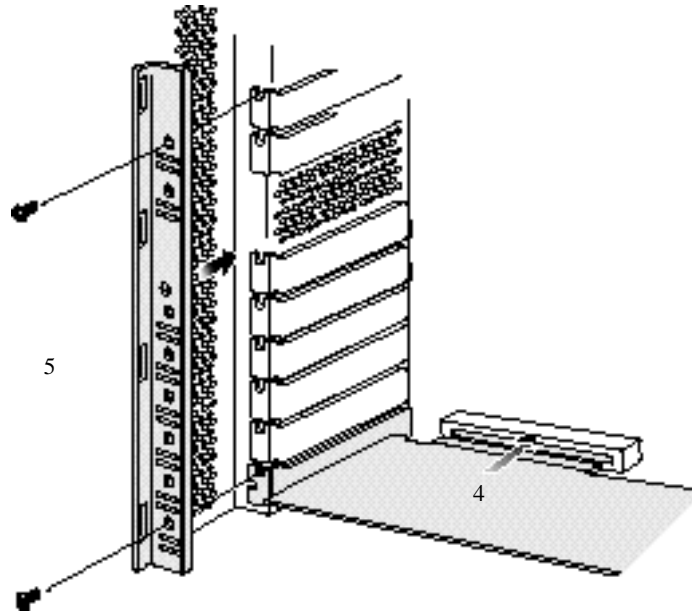
NOTE: Store the removed slot covers properly.



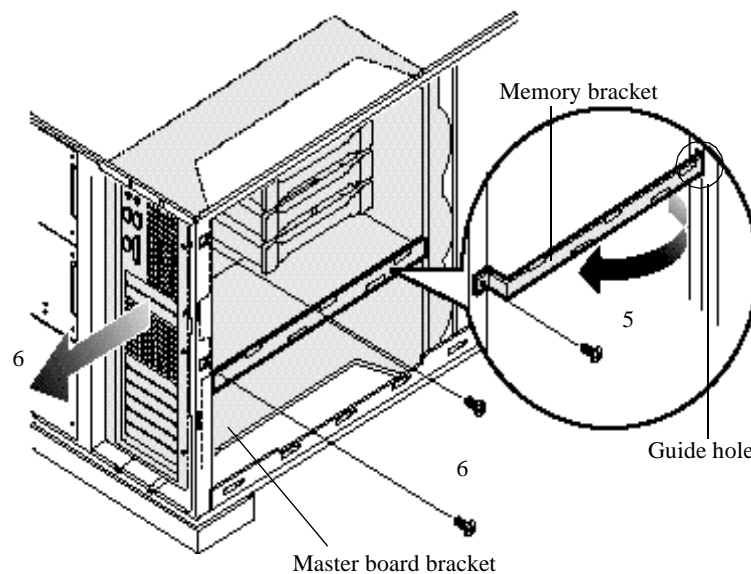
4. Aligning the connector side with the slot and the left end of the board with the slot guide, and holding both ends of the board, push in the board.

NOTE: You need not align a half size board with the slot guide.

5. Fix the slot bracket with two mounting screws. Mounting screws must be installed in expansion slot (PCI) 1 and expansion slot (ISA) 1.



6. Insert the claw of the memory bracket into the guide holes on the system equipment, then fix it with mounting screws.
7. Pull the master board bracket to the back, then fix it with two mounting screws.



Removing ISA boards

Remove ISA boards in the reverse procedure to their installation.

4: System Environment Settings

SCSI Utility

When you install SCSI device, you must make necessary settings using the SCSI Configuration Utility (“SCSI Utility” below).

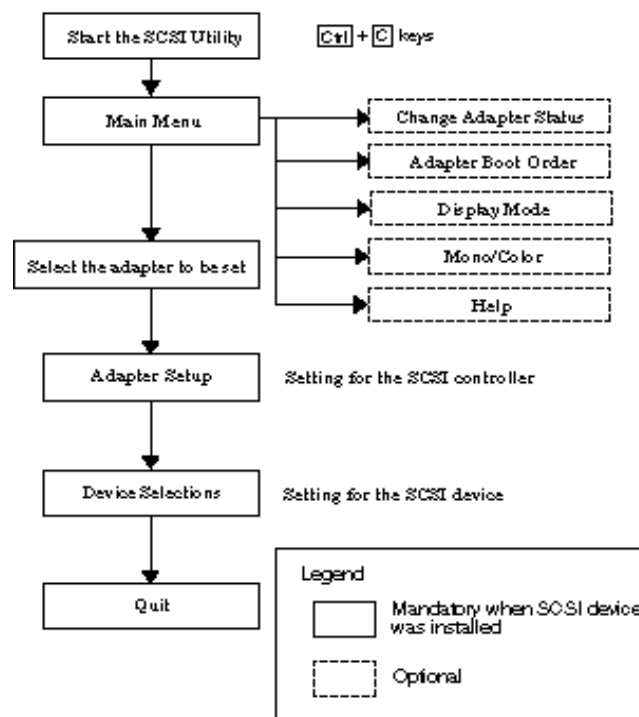
Flow of Operation with the SCSI Utility

The flow of operation with the SCSI Utility is as follows:



The SCSI Utility must be installed after an SCSI device is installed.

A driver must be installed after the SCSI utility is executed. See “Procedure of Installing a Driver” attached to the system for the driver-installing procedure.



Starting the SCSI Utility

The SCSI Utility, stored in ROM of the system equipment, must be started in the following steps:

1. Turn on the system equipment.
2. When “Press Ctrl-C to start Symbios Configuration Utility....” is displayed, holding down **Ctrl** key, press **C** key.

The SCSI Utility will be started to display the following Main Menu:

Symbios Logic SCSI Configuration Utility Ver. XXX					
MAIN MENU					
	Port Num	Inq Level	-----Status----- Current Next-Boot		NvRAM Found
SYM53C810	2000	11	On	Off	Yes
SYM53C896	3000	5	On	On	Yes
SYM53C896	3400	11	On	On	Yes
Change Adapter Status					
Adapter Boot Order					
Additional Adapter Configuration					
Display Mode=Verbose					
Mono/Color					
Language					
Help					
Quit					
Use arrow keys to select from menu Then press ENTER					

If the operating system has already started before **Ctrl** and **C** keys are pressed, terminate the OS and then restart the system equipment. Some types of OS, such as Windows NT, requires a special operation such as shutdown. Check the manual of your OS.

Checking the SCSI ID

You can check the SCSI ID either with the SCSI Utility or from the SCSI BIOS display at the time of system startup. When the system is started, “Press Ctrl-C to start Symbios Configuration Utility....” is displayed on the screen, followed by the display below. The ID column shows the SCSI IDs for the SCSI devices (including the SCSI controller).

NOTE: Possible causes for incorrect ID display are:

- The SCSI ID has already been used by another SCSI device.
- No SCSI cable is connected.
- No terminating resistor has been set for both ends of the SCSI bus.

HBA	ID	LUN	VENDOR	PRODUCT	REV	SYNC	WIDE	CYL/HB/SEC
0	3	0	AAAAAAA	BBBBBBBBB	xxxx	xxxx	xx	
0	7	0	Symbios	SYM53C810	xxxx	10.0	8	
1	7	0	Symbios	SYM53C896	xxxx	80.0	16	
2	7	0	Symbios	SYM53C896	xxxx	80.0	16	

* AAAAAA : manufacturer BBBBBBB : format

If other messages are displayed, see “Error Messages for the SCSI Utility” on page 110.

SCSI Utility Screen

Configuration of the SCSI Utility screen

When the SCSI Utility is started, the following screen is displayed:

Symbios Logic SCSI Configuration Utility Ver. X.XX						
MAIN MENU						
		Port	Irq	-----Status-----		NvRAM
		Num	Level	Current	Next-Boot	Found
1	SYM53C810	2000	11	On	Off	Yes
	SYM53C896	3000	5	On	On	Yes
	SYM53C896	3400	11	On	On	Yes
	Change Adapter Status					
	Adapter Boot Order					
	Additional Adapter Configuration					
2	Display Mode=Verbose					
	Mono/Color					
	Language					
	Help					
	Quit					
3						
Use arrow keys to select from menu Then press ENTER						



The screen above and the screens in succeeding descriptions are merely examples. Depending on the configuration of the system equipment, the contents of the display might be slightly different.

Items displayed in white on the screen cannot be selected.

NOTE: Because the SCSI controller installed on the master board has three bus systems, three displays are provided for the SCSI controller on this screen.

Hitachi PC VisionBase 8450H/R Server does not use ports with Port Num 3400 of on-board Wide-SCSI controllers. Therefore, setting for such port is unnecessary.

1. Adapter name

The following items are displayed concerning the SCSI controller (adapter) installed in the system equipment. Choosing this will display a submenu, on which you can make settings for the SCSI controller and for the SCSI device(s) connected.

- Name: Adapter name
- Port Num: Port number
- IRQ
- Current: Currently usable or not
- Next-Boot: Usable or not when the system is started next time
- NvRAM Found: NvRAM is provided or not

2. Menu items

Choose these menus as required. See “Other Functions” on page 106 for details of each item.

3. Cursor





You can move the cursor (shadowed portion) with arrow keys  .


“SYM53C810” is displayed for the Narrow-SCSI controller. Use this to install a removable device other than an internal DLT.

“SYM53C896” is displayed for the Wide-SCSI controller. Use this only when installing an internal DLT. Two displays are provided for the Wide-SCSI controller, because it has two ports.

Key operation for the SCSI Utility

The SCSI Utility uses the following keys:

Key	Operation
 	Moves the cursor to another item.
	Chooses the item on which the cursor is positioned, or changes the setting of the item.
	Returns to the original menu.

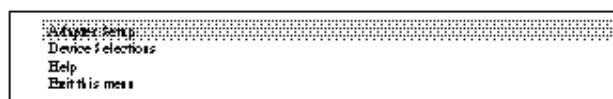
In the following descriptions in this manual, a sequential operation of (1) placing the cursor to an item using the arrow keys and then (2) pressing  key is simply referred to as “Choosing”.

What You can Set with Adapter Setup





In the Main Menu, choose the SCSI controller and then choose [Adapter Setup] to make settings for the SCSI controller.

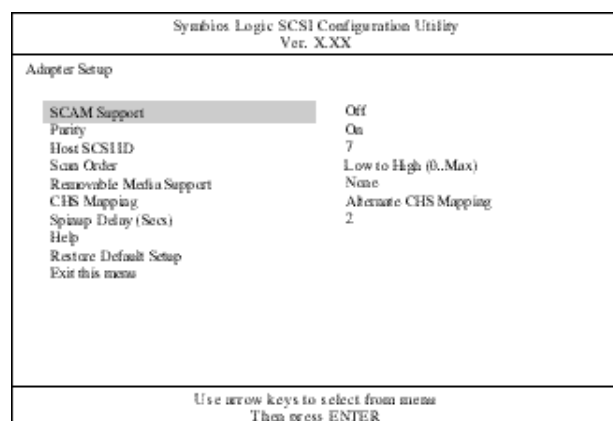
1. In the Main Menu of the SCSI Utility, choose the SCSI controller.


The following submenu is displayed:



2. Choose [Adapter Setup].

The following [Adapter Setup] screen is displayed. To change the setting of an item, move the cursor to that item, then press  key. From the list of items displayed, select the one you want with arrow keys   , then press  key. See descriptions in “SCAM Support” on page 101 onward for each item.



3. When you complete the setting, press  key or choose [Exit this menu].

The menu for step 1 is displayed.

4. Press **[Esc]** key or choose [Exit this menu].

The following menu is displayed. Unless you changed settings in step 2, you will return to the Main Menu.



5. Choose [Save Changes].

This saves the settings and returns to the Main Menu. If you want to return to the Main Menu without saving the settings, choose [Cancel Changes]. To not return to the Main Menu, choose [Cancel Exit].

SCAM Support

Used to specify whether or not to have SCSI IDs automatically assigned to SCSI devices that support the SCAM (SCSI Configured Automatically) protocol. Specifying “On” enables the SCSI controller to automatically assign SCSI IDs to the SCSI devices that support the SCAM protocol. In ordinary circumstances, use the default “Off”.

- On: Effective
- Off: Ineffective (default)

Parity

Used to specify whether or not to make a parity check for the SCSI bus effective. In ordinary circumstances, use the default “On”.

- On: Effective (default)
- Off: Ineffective

Host SCSI ID

Used to set an SCSI ID for the SCSI controller. In ordinary circumstances, use the default “7”.

- 0–15: (“7” is the default)

Scan Order

used to set the order of scanning SCSI devices. In ordinary circumstances, use the default “Low to High (0..Max)”.

- Low to High (0..Max): In ascending order of SCSI ID (default)
- High to Low (Max..0): In descending order of SCSI ID

Removable Media Support

Used to specify whether or not to control removable devices by BIOS. In ordinary circumstances, use the default “None”.

- None: Not controlled by BIOS (default).
- Boot Drive Only: Only the boot drive is controlled by BIOS.
- With Media Installed: All removable devices are controlled by BIOS.

CHS Mapping

Used to define a Cylinder Head Sector (CHS). Use “Alternate CHS Mapping” in this system.



If you changed the setting for this item, you need to erase all existing partitions and data using the FDISK/MBR command or FORMAT utility, then recreate partitions and data.

Before changing the setting for this item, make a backup copy of the data.

- SCSI Plug and Play Mapping: Standard CHS Mapping compliant to ANSI (default)
- Alternate CHS Mapping: Non-standard CHS Mapping (Hitachi PC VisionBase 8450H/R Server setting value)

Spinup Delay (Secs)

Used to set a delay time until the hard disk is spun up. In ordinary circumstances, use the default “2”.

- 1 to 10: (“2” is the default)

Help

An explanation (in English) of the [Adapter Setup] screen is displayed. Pressing the space key or any other key will clear the explanation.

Restore Default Setup

Returns the setting for each item in the [Adapter Setup] screen to defaults.

Exit This Menu

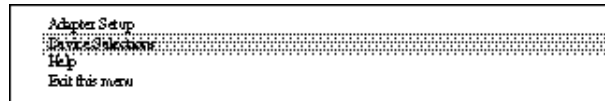
Terminates the operation on the [Adapter Setup] screen, then returns to the original menu.

What You Can Set with Device Selections

In the Main Menu, choose the SCSI controller and then choose [Device Selections]. You can now make settings for the selected SCSI device.

1. In the Main Menu of the SCSI Utility, choose the SCSI controller.

The following submenu is displayed:



2. Choose [Device Selections].

A list of SCSI devices is displayed.

NOTE: The figure below is an example for the Narrow-SCSI controller (SYM53C810). If you selected the Wide-SCSI controller (SYM53C896), the display contents will differ slightly.

Symbios Logic SCSI Configuration Utility Ver. X.XX								
Devices 0 to 7								
	Sync Rate	Data Width	Disc	Time Out	Scan Bus	LUNS	Queue Tags	Init Boot
(SCSI device)	10	8	On	10	Yes	Yes	On	No
Dev1 N/A	10	8	On	10	Yes	Yes	On	No
Dev2 N/A	10	8	On	10	Yes	Yes	On	No
Dev3 N/A	10	8	On	10	Yes	Yes	On	No
Dev4 N/A	10	8	On	10	Yes	Yes	On	No
Dev5 N/A	10	8	On	10	Yes	Yes	On	No
Dev6 N/A	10	8	On	10	Yes	Yes	On	No
SYM53C810	10	8	On	10	Yes	Yes	On	No
Devices 8 to 15								
Help								
Exit this menu								
Use arrow keys to select from menu Then press ENTER								

First SCSI devices with SCSI IDs 0 to 7 are displayed. In this example, only the SCSI device with SCSI ID 0 is connected. Each of the lines with “DevX N/A” indicates that no SCSI device is connected for the SCSI ID corresponding to X.

NOTE: For the Narrow-SCSI controller (SYM53C810), 0 to 7 can be used for SCSI IDs.

Choosing [Devices 8 to 15] will display SCSI devices with SCSI IDs 8 to 15. To return to the original screen, choose [Devices 0 to 7] on that screen.

3. Choose the SCSI device for which you want to change settings.

The following screen is displayed. To change the setting of an item, move the cursor to that item, then press

[Enter] key. From the list of items displayed, select the one you want with arrow keys **[↑]** **[↓]**, then press **[Enter]** key. See descriptions in “Sync Rate (MBytes/sec)” on page 104 onward for each item.

Symbios Logic SCSI Configuration Utility Ver. X.XX	
(SCSI device) Setup	
Sync Rate (MBytes/sec)	10
Width (bits)	8
Disconnect	On
Read/Write I/O Timeout (secs)	10
Scan for Device at Boot Time	Yes
Scan for SCSI LUNS	Yes
Queue Tags	On
Initial Boot Device	No
Format	
Verify	
Help	
Restore Default Setup	
Exit this menu	
Use arrow keys to select from menu Then press ENTER	

4. When you complete the setting, press **[Esc]** key or choose [Exit this menu].

The screen for step 2 is displayed.

5. Press **[Esc]** key or choose [Exit this menu].

The menu for step is displayed.

6. Press **[Esc]** key or choose [Exit this menu].

The following menu is displayed. Unless you changed settings in step 3, you will return to the Main Menu.

Save Changes
Cancel Changes
Cancel Exit

7. Choose [Save Changes].

This saves the settings and returns to the Main Menu. If you want to return to the Main Menu without saving the settings, choose [Cancel Changes]. To not return to the Main Menu, choose [Cancel Exit].

Sync Rate (MBytes/sec)

Used to set a transfer rate in MBytes/sec. Use the default “10” for the Narrow-SCSI controller; change the setting to “20” for the Wide-SCSI controller.

Narrow-SCSI

- Off
- 5
- 10: (default)

Wide-SCSI

- Off
- 10
- 20: (Hitachi PC VisionBase 8450H/R Server setting value)
- 40
- 80: (Default)

Width (bits)

Used to set an SCSI width in bits. Use the default “8” for the Narrow-SCSI controller and the default “16” for the Wide-SCSI controller.

Narrow-SCSI

- 8: (default; this value is unchangeable)

Wide-SCSI

- 8
- 16: (default)

Disconnect

Used to specify whether or not to temporarily release the bus for use by other SCSI devices when a particular SCSI device requires much processing time to execute a command requested from the board. In ordinary circumstances, use the default “On”.

Some SCSI devices do not have this “Disconnect” function. For such devices, select “Off”.

- Off: Does not release the bus.
- On: Releases the bus (default).

Read Write I/O Timeout (secs)

Used to set time-out length for read/write operation. If you choose this item, a numeric entry field is displayed. Enter a value you desire in this field, then press the [Enter] key. In ordinary situations, use the default “10”.

Scan for Device at Boot Time

Used to specify whether or not to scan this device at the time of startup.

- No: No to scan
- Yes: To scan (default)

Scan for SCSI LUNS

Used to specify whether or not to support logical unit numbers (LUNs).

NOTE: Specifying “No” will scan only LUN0 for some devices replying with all LUNs regardless of whether or not they are in use.

- No: No to support
- Yes: To support (default)

Queue Tags

Used to specify whether or not to support addition of commands.

- Off: Not to support
- On: To support (default)

Initial Boot Device

Used to specify whether or not to boot from this device at the time of startup.

- No: Not to boot (default)
- Yes: To boot

Format

Formats the SCSI device physically.



Executing “Format” will erase all data. In ordinary situations, do not choose this item.
To format only particular partitions, use the FORMAT command of your OS.

Verify

Conducts a verify check for the SCSI device to detect defective sectors.

Help

An explanation (in English) of this screen is displayed. Pressing the space key or any other key will clear the explanation.

Restore Default Setup

Returns the setting for each item on this screen to defaults.

Exit This Menu

Terminates the operation on this screen and returns to the original menu.

Other Functions

This section explains each menu item other than SCSI device names (adapter names). For operations when an SCSI device is selected, see the descriptions in “What You can Set with Adapter Setup” on page 100 and “What You Can Set with Device Selections” on page 103.

Change Adapter Status

Used to specify whether or not to activate/deactivate SCSI devices collectively for each SCSI controller that they are connected to. Choosing this item will display the following screen.

Symbios Logic SCSI Configuration Utility Ver. X.XX					
MAIN MENU					
Change Status on Next Boot					
Part	Inq	-----Status-----		NoRAM	
Num	Level	Current	Next-Boot	Found	
SYM53C810	2000	11	On	Off	Yes
SYM53C896	3000	5	On	On	Yes
SYM53C896	3400	11	On	On	Yes

Move the cursor to the SCSI controller for which you want to change the setting, then press **Enter** key. The setting for the [Next Boot] field will be changed.

For the Narrow-SCSI controller (SYM53C810), be sure to change the setting to “Off” before use.

- On: SCSI devices will be recognized the next time the SCSI controller is started. (Default)
- Off: No SCSI devices will be recognized the next time the SCSI controller is started.

Adapter Boot Order

Used to specify the order of booting for each SCSI controller. Choosing this item will display the following screen.

Symbios Logic SCSI Configuration Utility Ver. XXX							
Adapter Boot Order							
Boot Order		Bus	DevFunc	Boot Order		Bus	DevFunc
0	SYM53C810	00	40	1	SYM53C896	00	18
2	SYM53C896	00	19				

For the Wide-SCSI controller (SYM53C896) with Port Num 3000, “18” is displayed under “DevFunc”.

For the Wide-SCSI controller (SYM53C896) with Port Num 3400, “19” is displayed under “DevFunc”.

Choosing the SCSI controller will display “Enter New Sequence Number:”. Enter a number as the activation order (nth) of the SCSI controller, then press **Enter** key.

NOTE: You cannot specify a value that exceeds the number of SCSI controllers.



In some cases, no Boot Order value is set for a newly installed SCSI controller. When you changed the configuration of the system, make sure that a Boot Order value has been set for the SCSI controller. If not, set the value by yourself.

Additional Adapter Configuration

Choose this item when you want to change the setting of SCSI boards in a system with some option board(s) installed. You can choose this item only when the number of SCSI controllers is 5 or more.

NOTE: Hitachi PC VisionBase 8450H/R Server does not allow installation of option SCSI boards.

Display Mode

Used to specify whether or not to display information about SCSI devices by SCSI BIOS on the screen at the time of system startup.

- **Verbose:** Displays information. (Default)
- **Terse:** Does not display information.

Mono/Color

Switches the screen display between monochrome and color. Choosing this item immediately switches the display. The default is “Color”.

Language

Unsupported item; you cannot choose this.

Help

An explanation (in English) of the [Adapter Setup] screen is displayed. Pressing the space key or any other key will clear the explanation.

Quit

Terminates the SCSI Utility. If you changed settings within the SCSI utility, the following message is displayed. Press the space key or any other key to restart the system equipment.

Rebooting system to change global settings...
Press any key

List of Setting Values for SCSI Devices

The settings for SCSI devices are shown below.

Setting items for boards	Device	
	CD-ROM	DAT
	PC-UCS224	PC-UD5160A
MAIN MENU		
SYM53C810		
Adapter Setup		
SCAM Support	Off	Off
Parity	On	On
Host SCSI ID	7	7
Scan Order	Low to High(0..Max)	
Removable Media Support	None	None
CHS Mapping	Alternate CHS Mapping	
Spinup Delay (Secs)	2	2
Device Selections		
Each device		
Sync Rate (MBytes/sec)	10	10
Width(bits)	8	8
Disconnect	On	On
Read/Write I/O Timeout(sec)	10	10
Scan for Device at Boot time	Yes	Yes
Scan for SCSI LUNS	Yes	Yes
Queue Tags	On	On
Initial Boot Device	No	No
Format	Command; not a setting value	
Verify	Command; not a setting value	
Change adapter Status(Next Boot)	Off	
Adapter Boot Order	Depends on the configuration.	
Additional Adapter Configuration		
Display Mode	Verbose	
Mono/Color	Color	
Language	Unsupported	

The settings for SCSI devices are shown below. (Continued)

Setting Items for boards	Device			
	DAT	Magneto-optic device	DAT changer	DLT
	PC-UD5240	PC-UM5640	PC-UD5246	PC-UL5200
MAIN MENU				
SYM53CSI0				
Adapter Setup				
SCAM Support	Off	Off	Off	Off
Parity	On	On	On	On
Host SCSI ID	7	7	7	7
Scan Order	Low to High(0_Max)			
Removable Media Support	None	None	None	None
CHS Mapping	Alternate CHS Mapping			
Spinup Delay (Secs)	2	2	2	2
Device Selections				
Each device				
Sync Rate (MBytes/sec)	10	10	10	10
Width(bits)	8	8	8	8
Disconnect	On	On	On	On
Read Write I/O Timeout (secs)	10	10	10	10
Scan for Device at Boot time	Yes	Yes	Yes	Yes
Scan for SCSI LUNs	Yes	Yes	Yes	Yes
Queue Tags	On	On	On	On
Initial Boot Device	No	No	No	No
Format	Command; not a setting value			
Verify	Command; not a setting value			
Change adapter Status(Next Boot)	Off			
Adapter Boot Order	Depends on the configuration.			
Additional Adapter Configuration				
Display Mode	Verbose			
Mono/Color	Color			
Language	Unsupported			

The settings for SCSI devices are shown below. (Continued)

Setting items for boards	Device
	DLT
	PC-UL7380
MAIN MENU	
SYM53C896	
Adapter Setup	
SCAM Support	Off
Parity	On
Host SCSI ID	7
Scan Order	Low to High (0..Max)
Removable Media Support	None
CHS Mapping	Alternate CHS Mapping
Spinup Delay (Secs)	2
Device Selections	
Each device	
Sync Rate (Mbytes/sec)	20
Width(bits)	16
Disconnect	On
Read/Write I/O Timeout(secs)	10
Scan for Device at Boot time	Yes
Scan for SCSI LUNS	Yes
Queue Tags	On
Initial Boot Device	No
Format	Command: not a setting value
Verify	Command: not a setting value
Change adapter Status(Next Boot)	On
Adapter Boot Order	Depends on the configuration.
Additional Adapter Configuration	
Display Mode	Verbose
Mono/Color	Color
Language	Unsupported

Error Messages for the SCSI Utility

At the time of system startup, the following messages can be issued by SCSI BIOS. Check the message and take corrective action if necessary.

Message: Error accessing NVRAM, system may fail boot

Explanation: NVRAM read error. The NVRAM might be damaged.

Message: Failed, reverting all device to narrow

Explanation: An error occurred at wide negotiation, so processing is performed with the SCSI bus width switched to 8-bit mode. It is possible that the target-side firmware is faulty.

Message: VerifyElTorito: XXXXXXXXX Failed

Explanation: An error occurred while booting CD-ROM according to the El Torito specifications. The media might be damaged.

Message: Device has an unsupported sector size

Explanation: The sector size of the connected SCSI device is unsupported. Use an SCSI device with proper sector size.

Message: ERROR! Device is not responding to a read capacity

Explanation: The connected SCSI device did not respond to the READ CAPACITY command.

Message:	Boot ROM will not install: Incompatible SDMS 3.X version
Explanation:	BIOS version 3.XX.XX had already been loaded before version 4.XX.XX was loaded. Update it to version 4.XX.XX.
Message:	ERROR! The PCI System BIOS is NOT present
Explanation:	There is no PCI system BIOS. The system has a problem in a portion other than this board.
Message:	INVALID serial EEPROM data serial EEPROM was
Explanation:	Incorrect data has been detected within NVRAM. The data is rewritten to the initial value by BIOS.
Message:	ERROR! This adapter is malfunctioning
Explanation:	The board operated abnormally. The board might be faulty.
Message:	Bus Master ERROR
Explanation:	The controller chip on the board operated abnormally. The controller chip might be faulty.
Message:	Warning! IO address not enabled
Explanation:	The PCI system BIOS has not assigned any I/O address to the board. The system has a problem in a portion other than this board.
Message:	Failed to add device too many devices
Explanation:	Too many SCSI devices are to be connected. Up to 24 SCSI devices can be connected.
Message:	Calculated number of heads is too large!
Explanation:	The header size of the drive's boot partition block is incorrect.
Message:	<CdGeometry: No 55AA at end of MBR!>
Explanation:	The boot partition block of the drive has an incorrect signature.
Message:	<CdGeometry: SystemType is Zero!>
Explanation:	The boot partition of the drive has been destroyed.
Message:	<CdGeometry: End_Cyl is Zero!>
Explanation:	The boot partition of the drive has been destroyed.
Message:	<CdGeometry: cylHead not divisible by End_Cyl>
Explanation:	The boot partition of the drive has been destroyed.
Message:	Failed to add device too many devices!
Explanation:	Too many devices are to be controlled by INT13.
Message:	ERROR in serial EEPROM data, serial EEPROM was...
Explanation:	Data in EEPROM has been destroyed.

Returning the Settings to Defaults

This section explains how to return the settings to defaults and what action to take when you cannot start the utility. Read this section as required.

Returning the Settings of the Setup Information to Defaults

Referring “What You Can Do on the Exit Menu”, return the settings of the Setup information to defaults. After that, be sure to change the settings against “List of Utility Settings” on page 113.

Returning the SSU Settings to Defaults

[Method 1] Returning specific boards to defaults

To return the master board settings to defaults

Referring to “List of Utility Settings” on page 113, return each of the settings to defaults.

To return ISA board settings to defaults

If you remove an ISA board referring to “Removing ISA boards” on page 95, and then install that ISA board according to “Installing ISA Boards” on page 94, the settings will be returned to defaults. If there is a conflict between resources, the SSU automatically set to a value other than the default to avoid the conflict.

To return PCI board settings to defaults

1. Turn off the system equipment.
2. Remove all PCI boards from the slots.



For utility settings for extended boards, refer to the manual attached to each extended board.

3. Start the SSU.
4. After saving the settings on [Resource Configuration Add-in] in the SSU, terminate the SSU, then turn off the system equipment.
5. Reinsert the PCI boards into the slots.
6. Turn on the system equipment, then start the SSU. PCI board settings are automatically returned to the defaults.

[Method 2] Returning all settings to defaults

Unless you have reserved default settings as an SBF file, take the following steps:

1. Referring to “Removing extended boards” on page 93, remove all PCI and ISA boards.
2. After starting the SSU, save the settings by pressing the [Save] button in “Resources”.
3. Referring to “List of Utility Settings” on page 113, check all items and make necessary settings.
4. Reinsert the ISA boards in the slots, then referring to “Installing Extended Boards” on page 90, install the ISA boards.
5. Reinsert the PCI boards in the slots.
6. After starting the SSU, save the settings by pressing the [Save] button in “Resource”.

Returning the SCSI Utility Settings to Defaults

Referring to “Restore Default Setup” on page 102, return the settings of each screen to defaults.



After returning the setting to defaults, you need to set each item once again.

List of Utility Settings

The tables below show setting values of the Setup Menu, the SSU, and the SCSI Utility at the time of shipment. Be sure to check each of the settings because the Setup Menu, the SSU, and the SCSI Utility contain setting items that need to be changed after defaults are loaded (such items are enclosed in). For the meaning of each item, see the relevant chapter.

Setup Menu

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Main Menu	
System Time:	To be set by the user
System Date:	To be set by the user
Legacy Diskette A:	1.44/1.25MB 3½"
Legacy Diskette B:	Disabled
Hard Disk Pre-Delay	Disabled
Primary Master [None]AAPrimary Slave [None]	
Type:	Auto
Multi-Sector Transfers:	Disabled
LBA Mode Control:	Disabled
32 Bit I/O:	Disabled
Transfer Mode:	Standard
Ultra DMA Mode:	Disabled
Keyboard Features	
Numlock:	<input type="text" value="On"/>
Key Click:	Disabled
Keyboard auto-repeat rate:	30/sec
Keyboard auto-repeat delay:	1/2sec
Processor Information	
Processor X Stepping ID:	No
Processor X L2 Cache Size:	Depends on the processor
Language:	English (US)

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Advanced Menu	
Plug & Play O/S:	No
Reset Configuration Data:	No
PCI Configuration	
PCI Device, Embedded SCSI A	
Option ROM Scan:	Enabled
Enable Master:	Enabled
Latency Timer:	0080h
Active Termination:	SCSI A & B ON
Single-Ended Force/Auto Set:	Auto
PCI Devices	
Option ROM Scan:	Enabled
Enable Master:	Enabled
Latency Timer:	0080h
I/O Device Configuration	
Serial port A:	Enabled
Base I/O address:	3F8
Interrupt:	IRQ 4
Serial port B:	Enabled
Base I/O address:	2F8
Interrupt:	IRQ 3
Parallel port:	Enabled
Mode:	ECP
Base I/O address:	378
Interrupt:	IRQ 7
DMA channel:	DMA1
Floppy disk controller:	Enabled
PS/2 Mouse:	<input type="text" value="Enabled"/>
Use Multiprocessor Specification:	1.4
Large Disk Access Mode:	LBA
System Wakeup Feature:	Disabled
Pause Before Boot:	<input type="text" value="Enabled"/>

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Advanced Chipset Control	
Address Bit Permuting:	Enabled
Base RAM Step:	1MB
Extended RAM Step:	1MB
L2 Cache:	Enabled
ISA Expansion Aliasing:	Enabled
Memory Scrubbing:	Enabled
Read Prefetch for PXB0A:	32
Read Prefetch for PXB0B:	32
Security Menu (unsupported)	
User Password is:	Clear
Administrator Password is:	Clear
Set User Password:	Enter
Set Administrative Password:	Enter
Password on boot:	Disabled
Fixed disk boot sector:	Normal
Secure Mode Timer:	2 hr
Secure Mode Hot Key:	Space
Secure Mode Boot:	Disabled
Video Blanking:	Disabled
Floppy Write Protect:	Disabled
Server Menu	
System Management (unsupported)	
System Event Logging:	Enabled
Clear Event Log:	No
Assert NMI on AERR:	Enabled
Assert NMI on BERR:	Enabled
Assert NMI on PERR:	Disabled
Assert NMI on SERR:	Enabled
FSB ECC Check by chipset:	Enabled
FSB ECC Check by Processor:	Enabled

Hitachi PC VisionBase 8450H/R Server Setting Values	
Server Management Info	
Board Part Number:	XXXXXX-XXX
Board Serial Number:	XXXXXXXXXXXX
System Part Number:	XXXXXXXXXXXXXXX
System Serial Number:	XXXXXXXXXX
Chassis Part Number:	-----
Chassis Serial Number:	-----
BMC Revision:	XXXXXXXX
FPC Revision:	XXXXXXXX
Primary HSBP Revision:	XXXXXXXX
Secondary HSBP Revision:	XXXXXXXX
Console Redirection (unsupported)	
Com Port Address:	Disabled
IRQ#:	None
Baud Rate:	19.2K
Flow Control:	CTS/RTS + CD
Processor Retest:	No
EMP Password Switch:	Disabled
EMP ESC Sequence:	XXXX
EMP Hungup Line String:	XXXXXXXX
Modem Init String:	XXXXXXXXXXXXXXXXXX
High Modem Init Modem:	Space
EMP Access Mode:	Disabled
EMP Restricted Mode Access:	Disabled
EMP Direct Connect/Modem Mode:	Direct Connect
Boot Menu	
Floppy check:	Disabled
BIOS Boot Spec Support:	Limited
Boot Device Priority	
1.	Removable Devices
2.	Hard Drive
3.	ATAPI CD-ROM Drive

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Hard Drive	
1.	Bootable Add-in Card
Removable Devices	
1.	Legacy Floppy Drives
Maximum Number of I20 Drivers:	1
Message Timeout Multiplier:	1
Exit Menu	
Exit Saving Changes	
Exit Discarding Changes	
Load Setup Defaults	
Load Custom Defaults	
Save Custom Defaults	
Discard Changes	
Save Changes	

System Setup Utility (SSU)

Base Board: System Board

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
System Group	
System Identification and Version Information	
SSU Configuration File Version	(SSU version)
MP Spec Version	MP Spec V1.4
BIOS Multiboot Group	
BIOS Boot Spec Support	Limited
Memory Subsystem Group	
Extended Memory Options	
On-board Disk Controllers Group	
On-board Floppy Controller	Enable—Primary
On-board IDE Controller	<input type="text" value="Disable Primary Channel"/>
On-board Communication Devices Group	
Serial Port 1 Configuration	3F8h—IRQ 4
Serial Port 2 Configuration	2F8h—IRQ 3
Parallel Port Configuration	378h—IRQ 7
Parallel Port Mode	Extended Capabilities Parallel Port, DMA1
Floppy Drives Group	
Floppy Drive A Options	3.5 inch 1.44/1.25MB drive
Floppy Drive B Options	Disable or Not Installed
IDE Devices Group (unsupported)	
IDE Configuration—Primary Master	
IDE Drive Options—Primary Master	
32-Bit I/O	Disabled
Other Options	
IDE Configuration—Primary Slave	
IDE Drive Options—Primary Slave	
32-Bit I/O	Disabled
Other Options	

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Keyboard Group	
Num Lock	<input type="text" value="On"/>
Key Click	Disabled
Typematic Speed	30CPS
Typematic Delay	500 mS Delay
SCSI ROM BIOS Group	
Embedded SCSI devices Option ROM scan	<input type="text" value="Enabled"/>

Boot Devices

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Boot Device Priority	Removable Devices Hard Drive ATAPI CD-ROM Drive
Hard Drives	Bootable Add-in Cards

Security (unsupported)

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Admin Password	
User Password	
Options	
Hot Key	Disabled
Lock-Out Timer	2Hours
Secure Boot Mode	Disabled
Video Blanking	Disabled
Floppy Write Protect	Disabled
Reset/Power Switch Locking	Disabled

SCSI Utility

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Adapter Setup	
SCAM Support	Off
Parity	On
Host SCSI ID	7
Scan Order	Low to High(O..Max)
Removable Media Support	None
CHS Mapping	Alternate CHS Mapping
Spinup Delay (Secs)	2
Device Selections	
[Removable devices](ID #0-6)	
Sync Rate (MBytes/sec)	10 or 20 ¹
Width (bits)	8 or 16*2
Disconnect	On
Read Write I/O Timeout (secs)	10
Scan for Device at Boot time	Yes
Scan for SCSI LUNS	Yes
Queue Tags	On
Initial Boot Device	No
Format Device	—
Verify	—
Host Adapter (ID #7)	
Sync Rate (MBytes/sec)	10 or 80 ²
Width (bits)	8 or 16 ³
Disconnect	On
Read Write I/O Timeout (secs)	10
Scan for Device at Boot time	Yes
Scan for SCSI LUNS	Yes
Queue Tags	On
Initial Boot Device	No
Format Device	—
Verify	—

Item	Hitachi PC VisionBase 8450H/R Server Setting Values
Change Adapter Status (Next Boot)	<input type="text" value="On or Off<sup>4</sup>"/>
Adapter Boot Order	—
Additional Adapter Configuration	—
Display Mode	Verbose
Mono/Color	Color
Language	—

1 "10" is set for the Narrow-SCSI controller, "20" for the Wide-SCSI controller.

2 "10" is set for the Narrow-SCSI controller, "80" for the Wide-SCSI controller.

3 "8" is set for the Narrow-SCSI controller, "16" for the Wide-SCSI controller.

4 "Off" is set for the Narrow-SCSI controller, "On" for the Wide-SCSI controller.

